INCH-POUND

MIL-R-63997B(AR)
AMENDMENT 4
31 July 1993
SUPERSEDING
AMENDMENT 3
25 March 1992

MILITARY SPECIFICATION

RIFLE, 5.56MM: M16A2

DEC 21 1993

This Amendment forms a part of MIL-R-93997B(AR), dated 12 December 1986, and is approved for use by U.S. Army Armament, Munitions and Chemical Command and is available for use by all Departments and Agencies of the Department of Defense.

PAGE 9

3.4.5, last line: Add the following sentence before the last sentence:

"The cyclic rate of fire measurement shall be taken on a three round burst, occurring on the sixth or seventh trigger pull."

* 3.4.6: Delete in it's entirety and substitute the following:

"3.4.6 Targeting and accuracy. A series of 10 rounds fired from each rifle at a range of 91.4 meters shall be within the extreme spread and targeting area (heavy outline) specified in Figure I when the front and rear sights are set as follows. The normal rear sight peep (sight rotated fully rearward) shall be used with the rear sight set centrally in the slot for windage within plus or minus five (5) clicks. The top edge of the front sight post flange shall be set flush to .030 inch below the bottom surface of the front sight slot. Ammunition shall be Government standard M855, 5.56mm ball cartridges conforming to Drawing 9342868 and shall have a vertical and horizontal standard deviation at 600 yards between 3.4 inches and 4.0 inches when measured in accordance with MIL-C-63989."

3.6: Add the following sentence at the end of the paragraph:

"The bar code label shall be firmly affixed to the lower receiver in the position specified on the applicable drawing, the bar coding shall be clearly defined and the number on the label shall agree with the serial number stamped on the receiver."

PAGE 13

* 4.5.1.1.2, line 2: Delete "or a single shift's production, whichever is larger." and substitute "or a month's production, whichever is smaller."

PAGE 27

4.5.2.2, DEFECT NO. 95: Delete the following:

"Lower Receiver. Missing or illegible receiver markings (serial number manufacturer's identification, selector markings, etc.)"

and substitute:

"Lower Receiver. Incorrect, mislocated, damaged, illegible or missing markings (serial number, bar code label, manufacturer's identification, selector markings, etc.)"

PAGE 29

4.5.2.2.1, line 4: Delete "complete inspection approval stamp on the lower right hand side of the lower receiver, or the forward face of the magazine well." and substitute "complete inspection approval stamp on the packaging list of each shipping container."

PAGE 33

* TABLE IV: Delete note 7 in its entirety and substitute:

"[7]When five successive inspection lots meet the requirements, the inspection lot size shall be increased to 5000 rifles or a month's production, whichever is smaller, and the inspection sample selected. If rejection of the inspection sample occurs at any time, the inspection lot size of 1000 rifles (or smaller) shall be reinstated and the above procedures repeated in returning to the 5000 rifle (or smaller) lot size."

PAGE 37

4.7.5.3.2, line 5: Delete "occurring on the fourth or fifth trigger pull" and substitute "occurring on the sixth or seventh trigger pull".

PAGE 43

Group I, last line: Delete "(9349129)" and substitute "(12597640)".

PAGE 47

4.7.8.1, Delete "Rifles shall be lubricated as specified below at the beginning of the test and after the fifth cycle in every 10 cycle increment. Rifles shall be cleaned and lubricated at the end of every 10 cycles." and substitute "Rifles shall be cleaned and lubricated at the beginning of the test and at the end of every 10 cycles. Rifles shall be lubricated after the fifth cycle and every 10 cycle increments."

PAGE 53

6.1, Add as new subparagraph p.:

"p. Bar code marking requirements."

PAGE 54

* 6.5.1.e, last line: Delete "extracted from the magazine." and substitute "extracted from the chamber."

The attached insertable replacement pages listed below are replacements for stipulated pages. When the new pages have been entered in the document, insert the amendment as the cover sheet to the last previous amendment.

Replacement page	Page Replaced
55	55
56	56

Class II. Clearable by gunner with available equipment. (Basic Issue Items).

Class III. Not clearable by gunner.

6.5.6 Defective rifle. A defective rifle is a unit of product which contains one or more defects (end item assembly or component).

6.6 Quality program. When warranted, the contract should specify the application of MIL-Q-9858 or MIL-I-45208, as appropriate, in the Management Control Systems Summary List, DD Form 1660.

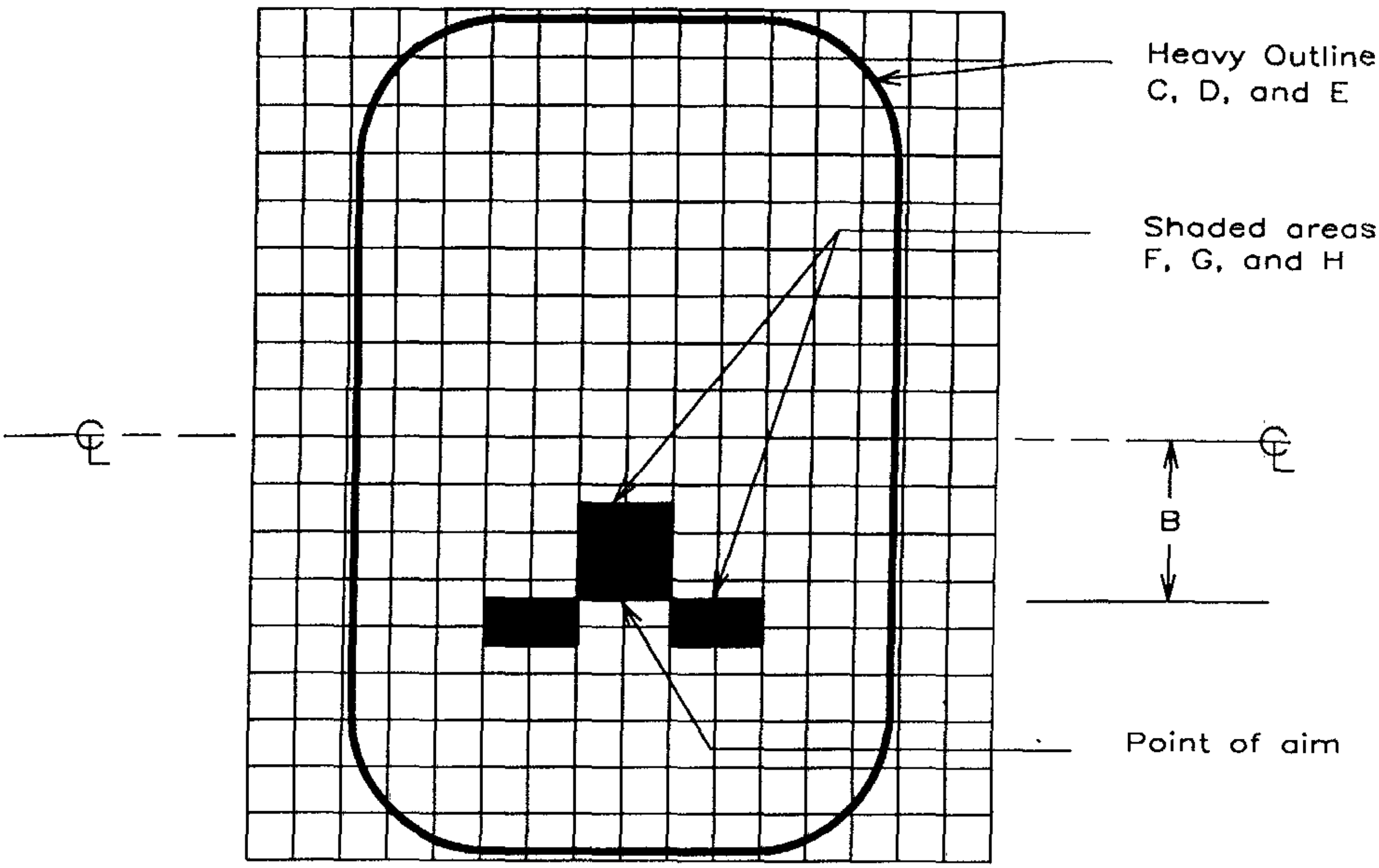
6.7 Inspection equipment. Unless otherwise specified, the contract should specify the application of MIL-I-45207 and MIL-STD-45662 on the Management Control Summary List, DD Form 1660.

6.8 Drawings. Drawings listed in Section 2 of this specification under the heading U.S. Army Armament Research, Development and Engineering Center may also include drawings prepared by, and identified as Rock Island Arsenal, Frankford Arsenal, Picatinny Arsenal or ARRADCOM drawing. Technical data originally prepared by these activities is now under the cognizance of ARDEC.

6.9 Changes from previous issue. The margins of this specification are marked with asterisks to indicate where changes (additions, modifications, corrections, deletions) from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous issue.

6.10 Subject term (key-word) listings.

Gun
Small arms
Weapon



A — 10 shot group extreme spread
B — Vertical distance from target centerline to point of aim
C — Height of heavy outline
D — Width of heavy line
E — Radius of corners of heavy outline
F — Width of shaded areas
G — Height of upper shaded area
H — Heights of lower shaded areas
I — Grid dimensions

	Target Diagram For		Dimensions in inches								
			Group	P.O.A.	Heavy Outline			Shaded Areas			Grid
	Meters	Yards	A	B	C	D	E	F	G	H	I
*	91.4	100	5.0	3.5	17.6	11.6	2.8	2.0	2.0	1.0	1.0

FIGURE I. Targeting and accuracy diagram.

Supersedes page 56 of MIL-R-63997B of 12 December 1986

NOTE: The margins of this amendment are marked with an asterisk or vertical lines to indicate where changes (additions, modifications, corrections, deletions) from the previous amendment was made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous amendment.

Custodian:
Army-AR

Preparing activity:
Army-AR

(Project 1005-A811)

NOTICE OF INACTIVATION
FOR NEW DESIGN

INCH POUND

MIL-R-63997B(AR)
NOTICE 1
20 February 1997

MILITARY SPECIFICATION

RIFLE, 5.56MM: M16A2

This notice should be filed in front of MIL-R-63997B(AR) dated 12 December 1986

MIL-R-63997B(AR) dated 12 December 1986 with Amendment 4, dated 31 July 1993 is inactive for new design and no longer used except for replacement purposes.

Preparing Activity:
Army - AR

AMSC N/A

FSC 1005

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

MIL-R-63997B(AR)
12 December 1986
SUPERSEDING
MIL-R-63997A(AR)
11 September 1985

MILITARY SPECIFICATION

RIFLE, 5.56MM: M16A2

This Specification is approved for use within the US Army Armament Munitions and Chemical Command and is available for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers a 5.56mm lightweight, air-cooled, gas operated, magazine-fed rifle designed for either three shot automatic burst or semi-automatic fire.

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications and standards. The following specifications and standards form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of these documents shall be those listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation.

SPECIFICATIONS

MILITARY

MIL-P-116	- Preservation, Methods of.
MIL-C-372	- Cleaning Compound, Solvent.
MIL-Q-9858	- Quality Program Requirements
MIL-C-9963	- Cartridge, 5.56mm: Ball, M193
MIL-W-13855	- Weapons: Small Arms and Aircraft Armament Subsystems, General Specification for.
MIL-I-45208	- Inspection System Requirements
MIL-I-45607	- Inspection Equipment, Acquisition, Maintenance and Disposition of.

AMSC N/A FSC 1005

MIL-L-46000	-	Lubricating Oil, Semi-Fluid (Automatic Weapons)
MIL-C-46936	-	Cartridge, 5.56mm, Test, High Pressure, XM197.
MIL-L-63460	-	Lubricant, Cleaner and Preservative for Weapons and Weapon Systems
MIL-C-63989	-	Cartridge, 5.56mm, Ball M855

STANDARDS

MILITARY

MIL-STD-105	-	Sampling Procedures and Tables for Inspection by Attributes.
MIL-STD-109	-	Quality Assurance Terms and Definitions.
MIL-STD-1235	-	Single and Multilevel Continuous Sampling Procedures and Tables for Inspection by Attributes.
MIL-STD-1949	-	Inspection, Magnetic Particle
MIL-STD-45662	-	Calibration System Requirements

2.1.2 Other Government documents, drawings and publications. The following other Government documents, drawings and publications form a part of this specification to the extent specified herein. Unless otherwise specified, the issues shall be those listed in effect on the date of solicitation.

DRAWINGS

U.S. ARMY ARMAMENT RESEARCH, DEVELOPMENT AND ENGINEERING CENTER (ARDEC)

9342868	Cartridge, 5.56MM, Ball; M855
9349000	Rifle. 5.56MM: M16A2
PDS9349000	Packaging Data Sheet for Rifle, M16A2

PUBLICATIONS

IEL9349000	Index List of Inspection Equipment, M16A2

(Copies of specifications, standards, drawings, and publications required by manufacturers in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting officer.)

2.1.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, (except for associated detail specifications, specifications sheets or MS standards) the text of this specification shall take precedence. Nothing in this specification, however, shall supersede applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 First article. When specified, a sample shall be subjected to first article inspection (see 4.4 and 6.1). Unless otherwise specified (see 6.1), the first article shall include the pilot pack (see 5.1).

3.2 Materials and construction. Rifles and parts shall conform to the materials and construction requirements specified herein, on Drawing 9349000 and drawings applicable thereto, and be in accordance with the applicable materials and construction provisions of MIL-W-13855.

3.3 Design. Rifles and parts shall conform to the design specified herein, on Drawing 9349000 and drawings applicable thereto, and be in accordance with the applicable design provisions of MIL-W-13855.

3.3.1 Upper receiver and lower receiver groups. The upper receiver group shall be attached to the lower receiver group by the pivot pin and shall be held securely in the closed position by the takedown pin. When the takedown pin and pivot pin are withdrawn to the stop position, the upper receiver group shall disassemble from the lower receiver group.

3.3.2 Lower receiver group.

3.3.2.1 Hammer. The hammer shall pivot on the hammer pin through its full range of travel without binding, and when the hammer is released from the cocked position, it shall pivot forward to the stop position under spring action.

3.3.2.2 Automatic sear. The automatic sear shall be retained in the lower receiver by the automatic sear pin. The automatic sear shall move through its full range of travel under spring tension without binding, and shall engage and restrain the hammer when the fire control selector is in the "BURST" position and the hammer is cocked by the bolt carrier. The automatic sear shall restrain the hammer until the sear is tripped by the forward motion of the bolt carrier.

3.3.2.3 Fire control selector. The fire control shall have three positions; safe, semi-automatic and burst and shall rotate manually without binding from one position to another when the hammer is cocked. The selector shall remain in place in each position by perceptable spring detent load until manually reset and shall be retained in the lower receiver by a spring loaded detent. With the hammer cocked, when the selector is placed in the "SAFE" position, it shall prevent the trigger from releasing the hammer so that the rifle is incapable of being fired. When

the selector is placed in the "SEMI-AUTOMATIC" position, it shall permit the disconnect to engage the hammer, so that the rifle is capable of semi-automatic firing only (single shot with each pull of the trigger.) When the selector is placed in the "BURST" position, it shall permit the automatic sear to engage the hammer, so that the rifle is capable of burst firing. (One, two, or three continuous shots the first time the trigger is pulled and held back. Three continuous shots on the second and each successive time the trigger is pulled and held back. One, two or three shots if the trigger is released before completion of the three shot cycle or all cartridges are expended before completion of the three shot cycle.)

3.3.2.4 Bolt catch. The bolt catch shall be retained on the lower receiver by the spring pin and held in the "down" position by the bolt catch plunger and spring. The bolt catch shall move through its full range of travel without binding and when positioned manually or by action of the magazine follower, it shall remain engaged and hold the bolt in the open (rearward) position. When the bolt catch is depressed the bolt shall return to battery position. When a fully loaded magazine is inserted into the magazine well and the bolt catch is depressed, the bolt shall return to battery position, stripping a cartridge from the magazine, and chambering it.

3.3.2.5 Magazine catch and magazine release button. The magazine catch, under spring action, shall securely retain the magazine in the magazine well. The magazine release button, when depressed, shall disengage the magazine catch from the magazine and permit removal of engagement with the magazine. When the bolt is held open (rearward) by the bolt catch, and the magazine release button is depressed, the empty magazine shall be ejected under spring assist from the magazine follower being depressed by the boltcatch. The spring tension of the magazine catch shall be adjustable by depressing the magazine release button and rotating the magazine catch clockwise to tighten; counterclockwise to loosen. The magazine release button shall be assembled to the magazine catch shaft, such that the end of the shaft is within one turn of being flush with the face of the magazine release button.

3.3.2.6 Disconnects.

3.3.2.6.1 Semi-disconnect. The semi-automatic disconnect shall pivot freely on the trigger pin under spring action. When the selector is in the semi-automatic position, the semi-disconnect shall engage and restrain the hammer in the cocked position until the trigger is released. When the trigger is released the disconnect shall allow the hammer to return to the normal cocked position.

3.3.2.6.2 Burst disconnect. The burst disconnect shall pivot freely on the trigger pin under spring action. When the selector

is in the burst position, the burst disconnect shall engage and restrain the hammer in the cocked position every third shot until the trigger is released. When the trigger is released the disconnect shall allow the hammer to return to the normal cocked position.

3.3.2.7 Trigger. The trigger shall hold the hammer in the cocked position until the trigger is pulled. After partial or completed trigger pull, the trigger shall return to its normal forward positions (cocked and uncocked) under spring action.

3.3.2.8 Trigger guard. The trigger guard shall pivot on the trigger guard pin through its full range of travel. The trigger guard shall be retained in the closed position by the trigger guard spring loaded detent, and when in the open position it shall remain open against the pistol grip without manual assistance.

3.3.2.9 Pivot pin and takedown pin. The pivot pin and takedown pin shall move through their full range of travel without binding, and shall be retained in the extreme in-and-out position by spring action of the detents.

3.3.2.10 Pistol grip. The pistol grip shall be securely attached to the lower receiver and shall not interfere with operation of the selector lever.

3.3.2.11 Buttstock assembly. The buttstock assembly, stowage, shall be fastened securely to the lower receiver and shall not rotate on the lower receiver extension. The swivel, door assembly and butt plate assembly shall be securely fastened to the buttstock. The door assembly shall be capable of being manually unlatched, and when unlatched, the door assembly shall operate through its full range of travel without binding.

3.3.2.12 Buffer assembly. The buffer assembly shall function through its full range of travel under spring action without binding. The buffer assembly shall be securely retained in the lower receiver assembly by the spring loaded buffer retainer and be capable of being disassembled from the lower receiver assembly when the retained is manually depressed.

3.3.3 Upper receiver group.

3.3.3.1 Barrel assembly. The barrel shall be free of cracks, seams and other injurious defects and the bore and chamber shall be free of pockets, rings, bulges and other deformations. The chromium plating in the chamber and bore shall be free of nodules, flaking, pits, stripping, anode burns and evidence of etched base steel. Burrs and sharp edges shall be removed from chamber edges, and bolt locking lugs. Scratches or marks occurring in a chamber which otherwise meets the surface roughness requirements, shall be permitted, provided they do not cause marks on the cartridge case of high pressure test cartridge fired in the chamber.

3.3.3.1.1 Barrel assembly straightness. The barrel assembly shall be straight to the extent that a cylindrical plug with a diameter of .2173 + .0001 inches, and six (6) inches in length must drop through the barrel bore of its own weight. Also, a self aligning plug shall be inserted three (3) inches into the barrel bore at the muzzle, may have an angular deviation from the theoretical axis of zero degrees and three minutes($0^{o}3'$).

3.3.3.2 Gas tube. The gas tube shall be securely retained to the front sight assembly by the gas tube spring pin. The gas tube shall be free of mutilations and postioned for proper alignment with the bolt carrier key.

3.3.3.3 Handguard. The two-piece handguard shall be held firmly in place by the handguard cap and the spring loaded slip ring in the barrel nut assembly. When the slip ring is depressed rearward the handguards shall be capable of being removed.

3.3.3.4 Front sight. The front sight shall be securely attached to the barrel assembly by two taper pins. The front sight post shall be held in position by the spring loaded front sight detent. The detent, when depressed, shall disengage the front sight post and allow vertical adjustment of the post. Clockwise rotation of the front sight post, as indicated by the arrow on the top of the front sight, shall lower the front sight post. When the rifle is zeroed as specified in 3.4.6, there shall be at least 16 additional clicks of adjustment available in a downward direction. The front sight shall provide a means for retaining and positioning a bayonet knife.

3.3.3.5 Rear sight. The rear sight shall pivot to full vertical position of both normal and short range peeps and be held in each position under spring action when at the extreme left and extreme right windage positions. The windage knob shall be held in position by the spring loaded detent. The windage knob shall be capable of rotating seven complete revolutions, moving the rear sight from the extreme left to the extreme right without binding The rear sight shall also be capable of and calibrated for elevating, by means of an elevation knob, to compensate for trajectory for ranges from 300 meters to 800 meters. The 0-200 meter setting shall be accomplished by setting the elevation knob on 300 meters and "flipping-up" the close range rear sight peep. The rear sight shall be adjusted as specified in 3.4.6.

3.3.3.6 Ejection port cover. The ejection port cover shall operate through its full range of travel under spring action without binding. The cover shall be retained in the closed position by the cover detent, and shall open under spring action when the bolt carrier is moved from the locked position rearward, or from the open position forward.

3.3.3.7 Forward assist assembly. The forward assist assembly shall operate through its full range of travel without binding. When depressed and released, it shall return under spring action to a fully outward position with the pawl completely disengaged from the bolt carrier. Depressing and releasing the forward assist shall cause progressive movement of the bolt carrier assembly into the battery position.

3.3.3.8 Compensator. The compensator shall be fastened securely to the barrel in accordance with the applicable drawings.

3.3.3.9 Front sling swivel. The front sling swivel shall be securely retained to the front sight assembly by the rivet and shall pivot freely through its full range of travel.

3.3.4 Bolt carrier group.

3.3.4.1 Key and bolt carrier assembly. The bolt carrier and key assembly shall move through its full range of travel without binding in the upper receiver. The carrier key shall engage the gas tube freely when the bolt carrier moves in the forward position. The bolt carrier key screws shall be torqued and staked in accordance with the applicable drawings.

3.3.4.2 Firing pin. The firing pin shall be retained in the bolt and bolt carrier assembly by the retaining pin. The firing pin shall move freely through its full range of travel in the bolt carrier assembly. The firing pin protrusion shall be a maximum of .036 inches and a minimum .028 inches. The chromium plating of the firing pin shall be free of nodules, flaking, stripping, anode burns and evidence of etched base steel, except as specified on the applicable drawing.

3.3.4.3 Charging handle. The charging handle shall move freely through its full range of travel in the upper receiver. When the charging handle is placed in the forward position it shall engage and lock securely in the upper receiver.

3.3.4.4 Bolt assembly. The bolt assembly shall be retained in the bolt carrier by the bolt cam pin and shall move through its full range of travel. The cam pin hole shall be swaged in accordance with the applicable drawings to prevent improper assembly of the bolt cam pin in the bolt assembly.

3.3.4.4.1 Extractor. The extractor shall be retained in the bolt by the extractor pin. The extractor shall move through its full range of travel under spring action without binding in the bolt and shall be capable of engaging and extracting cartridge cases from the barrel chamber when the rifle is function fired or manually operated.

3.3.4.4.2 Ejector. The ejector shall be retained in the bolt by the ejector pin and shall be held in the forward position by the ejector spring. The ejector shall move through its full range of travel under spring action without binding in the bolt and shall eject cartridge cases completely out of the rifle when the rifle is function fired or manually operated. When fully depressed, the ejector pin shall be flush with or below the cartridge seat in the bolt.

3.3.4.4.3 Cam pin. The cam pin shall be retained in the bolt assembly by the firing pin. The cam pin shall move through its full range of travel in the bolt carrier without binding. The cam pin shall be capable of being removed from the bolt carrier without removal of the bolt carrier key assembly. The cam pin shall be capable of being disassembled from the bolt and bolt carrier assembly and reassembled 180° about its vertical axis from its original position without causing binding in the assembly.

3.4 Performance characteristics.

3.4.1 Head space. The head space shall not be less than 1.4646 inches nor more than 1.4706 inches when measured to the .330 inch datum diameter on the first shoulder of the chamber. Testing shall be as specified in 4.5.3.1, TABLE III.

3.4.2 Firing pin indent. When the bolt is closed and the firing mechanism is released, the firing pin indent shall be not less than 0.020 inch. The firing pin indent shall not be off-center more than one half the maximum diameter of the indent. When, in a vertical, muzzle down position, the bolt carrier assembly is released from the full recoil position and the firing mechanism is not actuated, the firing pin indent shall not be more that 0.008 inch. Testing shall be as specified in 4.5.3.1, TABLE IV.

3.4.3 Trigger pull. The trigger pull shall be free of creep and shall be within the range of 5.5 to 9.5 pounds. Creep shall be interpreted to mean any perceptible rough movement between the time the trigger slack is taken up and the hammer is released. After partial or completed trigger pull, the trigger shall return to its normal forward position (cocked and uncocked) under spring action. Testing shall be specified in 4.5.3.1, TABLE III.

3.4.4 High pressure resistance. Each barrel assembly and bolt shall withstand the firing of one Government standard M197, 5.56mm high pressure test cartridge conforming to MIL-C-46936. After proof firing, parts shall be free of cracks, seams and other injurious defects as evidenced by visual and magnetic particle inspection. Testing shall be specified in 4.5.3.1, TABLE III.

3.4.5 Functioning. Each rifle shall operate without malfunctions or unserviceable parts. The cyclic rate of fire for 3 rounds of burst firing using a 30 round magazine shall be within 700 to 900 rounds per minute when firing M855, 5.56mm ball cartridges conforming to Drawing 9342868 and specification MIL-C-63989. Testing shall be as specified in 4.5.3.1, TABLE III.

3.4.6 Targeting and accuracy. A series of 10 rounds fired from each rifle at a range of either 91.4 meters or 45.7 meters shall be within the extreme spread and targeting area (heavy outline) specified in Figure I when front and rear sights are set as follows. The normal rear sight peep (sight rotated fully rearward) shall be used with the rear sight set centrally in the slot for windage within plus or minus five (5) clicks. The top edge of the front sight post flange shall be set flush to .030 inch below the bottom surface of the front sight slot. Maximum utilization shall be made of the 91.4 meter range. Ammunition shall be Government standard M855, 5.56mm ball cartridges conforming to Drawing 9342868, and shall have been certified by the Government to be of a quality that will group within a mean radius of 1.2 to 1.4 inches at 200 yards as measured in accordance with MIL-C-9963. Testing shall be as specified in 4.5.3.1, TABLE III.

3.4.7 Endurance. Rifles shall be capable of withstanding the firing of 6,000 rounds for endurance with not more than the number of malfunctions and unserviceable parts allowed for both single rifle and four rifles combined as allowed in TABLE I. The cyclic rate of fire of not more than one reading on a single rifle or not more than two readings on four rifles combined, shall fall outside of 700 to 940 rounds per minute. Ammunition used shall be Government standard M855, 5.56mm ball cartridges conforming to Drawing 9342868. Testing shall be as specified in 4.5.3.1, TABLE IV.

3.5 Interchangeability. Unless otherwise specified on the drawings, all parts shall be interchangeable. Testing shall be as specified in 4.5.3.1, TABLE IV.

3.6 Marking. Each rifle shall be clearly marked in accordance with the applicable drawings and MIL-W-13855.

3.7 Workmanship. Workmanship shall be in accordance with workmanship requirements of MIL-W-13855.

TABLE I. Malfunctions and unserviceable parts permitted in 6,000 rounds.

Malfunctions[1]	Single Rifle[7]	Four Rifles[7]
Failure of bolt to lock[2]	2	4
Failure to fire	2	4
Failure to feed (from magazine)	4	9
Failure to eject	2	4
Failure to chamber	3	7
Failure to extract	1	2
Bolts fails/hold rear	3	8
All other malfunctions[4]	0	0
Total - Above malfunctions combined	9	22

Unserviceable Parts[1]	Minimum Life[5] Rounds	Four Rifles[6] Combined
Ejector spring	3,000	2
Extractor spring	2,000	1
Other parts (see note 3)	3,000	1
Total unserviceable parts - above unserviceable parts combined		3

[1]All malfunctions and unserviceable parts occurring during the test shall be recorded and properly identified regardless of whether they are chargeable to the rifle. Malfunctions that are traceable to components determined unserviceable after meeting minimum life round requirements may be replaced and charged against the rifle. When Government representatives have verified that previously recorded malfunctions are attributable to the unserviceable part, they shall not be counted against the rifle provided they occurred within the previous 200 rounds of firing. Malfunctions determined not to be chargeable to the rifle as a result of failure analysis shall be verified by the Government representative witnessing the test and shall not be counted (see 6.5).

[2]In the event of any failure of bolt to lock malfunction, the forward assist assembly shall be operated. Failure of the forward assist assembly to remain engaged with the bolt carrier assembly during manual attempt to lock bolt shall be considered an additional malfunction in the category of "other malfunctions".

[3]Other parts shall be limited to trigger spring, disconnect springs, hammer spring, extractor pin and extractor.

[4]Other malfunctions include, but are not limited to: occurrence of doubling (two shots fired with a single trigger pull) during semi-automatic firing; failure to immediately stop firing when the trigger is released (uncontrolled fire) during burst firing; failure to fire three (3) shots on a complete trigger pull in burst mode other than in the first trigger pull (when fresh magazine is inserted or when selector is switched to "BURST") or last trigger pull (when magazine is emptied); and failure of forward bolt assist assembly to remain engaged with bolt carrier assembly during manual attempt to lock the bolt, etc.

[5]Minimum life rounds is defined as the minimum service life of an individual part, whether it is the original part or a replacement part, expressed in the number of weapon rounds fired with the part assembled in the weapon. For example, an extractor spring failing prior to firing 2,000 rounds on a new rifle, has not met the minimum life rounds. The failure shall be recorded and shall be cause for test failure.

[6]The allowable number of serviceable parts shown for 4 rifles combined applies only to parts failing after the minimum life rounds have been fired on the weapon. For example, ejector springs failing at 3,500 rounds on one rifle, and 4100 rounds on a second rifle, fall within the allowable limits of 2 unseviceable parts on 4 rifles combined however, failure of an ejector spring on a third rifle after firing 3,000 rounds which exceeds the allowance, shall be cause for test failure.

[7]Each individual rifle tested shall not exceed the allowable number for each malfunction in the list or the test shall have failed. When the rifle meets the individual allowable malfunctions and exceeds the cumulative total allowable malfunctions for a rifle, the test shall have failed. The combined four rifles tested shall not exceed the allowable number for each malfunction in the list or the test shall have failed. When the rifles meet the combined four rifles allowable malfunctions in the list and exceed the cumulative total allowable malfunctions for four rifles, the test shall have failed.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or order, the supplier may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to requirements.

4.1.1 Responsibility for compliance. All items must meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility assuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling in quality conformance does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to acceptance of defective.

4.2 Quality assurance terms and definitions. Quality assurance terms and definitions used herein are in accordance with MIL-STD-109.

4.3 Classification of inspections. The inspection requirements specified herein are classified as follows:

a. First article inspection (see 4.4).
b. Quality conformance inspection (see 4.5).

4.4 First article inspection. The first article shall be selected from early production and submitted for testing in accordance with the contract requirements (see 6.1). The first article shall be a representative of production processes to be used during quantity production. The first article shall be subjected to all examination and tests specified herein, and such other inspection as necessary to determine that all the requirements of the contract have been met.

4.5 Quality conformance inspection.

4.5.1 Inspection lot.

4.5.1.1 Rifles.

4.5.1.1.1 Formation and presentation. The formation and presentation of inspection lots shall be in accordance with MIL-STD-105. Lot formation shall be established after final inspection of rifles by the contractor and prior to conducting tests specified in TABLE IV.

4.5.1.1.2 Lot size. Unless otherwise specified herein, an inspection lot shall consist of 1,000 rifles or a single shift's production, whichever is larger. These rifles shall be assembled from lots of component parts that have met all inspection requirements.

4.5.1.1.3 Lot identification. Each inspection lot shall be identified with a lot number. The serial number of each rifle in a lot shall be recorded on the individual rifle record. The reason for rejection of any inspection lot shall be recorded. When a rejected inspection lot is resubmitted after reconditioning, it shall be identified as such.

4.5.1.2 Parts and packaging. The formation, size and presentation of inspection lots of parts and packaging shall be in accordance with MIL-STD-105. Inspection lots shall be as large as practicable in consideration of quality history, manufacturing conditions, contractor's delivery schedule, and shall be within the limitations of MIL-W-13855.

4.5.2 Examination.

4.5.2.1 Rifles. Final examination of rifles shall be performed by the contractor after completion of all testing of TABLE III. Unless otherwise specified herein, each rifle shall be examined for the classification of defects in 4.5.2.2. All non-conforming rifles shall be rejected and the reason for rejection recorded. The place of final examination and acceptance criteria shall be as specified in the contract (see 6.1).

4.5.2.1.1 Rejected rifles. Rejected rifles shall be corrected by the contractor and the corrective action shall be recorded. The rifles shall be reexamined for all defects listed in the applicable groups in 4.5.2.2.

4.5.2.1.1.1 Retest. When any of the following parts are replaced to correct a non-conforming rifle, the rifles shall be retested as indicated by asterisks:

DEFECT NO.	DEFECT	INSP. METHOD	REQUIRE- MENT	SAMPLING PROCEDURE
23.	Buffer Retainer Group. Burrs, cracks or mutilation of buffer retainer.	Visual	3.7	100%
	REMOVE: Buffer and Action Spring			
24.	Buffer. Burrs, cracks or mutilation of buffer.	Visual	3.7	100%
25.	Action Spring. Distortion or mutilation of action spring	Visual	3.7	100%
26.	Pistol Grip. Missing lock washer, cracks or mutilation of pistol grip.	Visual	3.7	100%
27.	Buttstock Assembly. Cracks or mutilation of stocks.	Visual	3.7	100%
* 28.	Buttstock Assembly. Improper assembly of stock.	Visual & Manual	3.3.2.11	100%
	REASSEMBLE: Buffer Assembly.			
* 29.	Buffer Group. Failure of buffer to function throughout full range without binding.	Manual	3.3.2.12	100%
30.	Lower Receiver. Burrs, cracks or mutilation of magazine well and trigger mechanism housing area.	Visual	3.7	100%

4.5.2.2 Classification of defects.

DEFECT NO.	DEFECT	INSP. METHOD	REQUIRE-MENT	SAMPLING PROCEDURE
	Lower Receiver, Pistol Grip, and Stock Assembly Group:			
1.	Lower Receiver. Failure of upper receiver to hinge without binding on the pivot pin when takedown pin is withdrawn to stop position.	Manual	3.3.1	100%
2.	Lower Receiver. Failure of lower receiver to readily disassemble from upper receiver when pivot pin is withdrawn to the stop position.	Manual	3.3.1	100%
3.	Pivot Pin and Takedown Pin. Failure to move throughout their full range of travel without binding and be retrained in their extreme in-and-out position by the detents.	Manual	3.3.2.9	100%
4.	Automatic Sear Group. Burrs, cracks, or mutilation of hammer catch surface and bolt carrier contact for the sear.	Visual	3.7	100%
* 5.	Automatic Sear Group. Mutilation, distortion, or improper assembly of sear spring.	Visual	3.7 and drawing	100%
6.	Automatic Sear Group. Failure of sear group to return to rest position under spring action.	Manual	3.3.2.2	100%

DEFECT NO.	DEFECT	INSP. METHOD	REQUIRE-MENT	SAMPLING PROCEDURE
7.	Hammer Group. Burrs, cracks or mutilation of trigger disconnects and automatic sear catch surface.	Visual	3.7	100%
8.	Hammer Group. Burrs, cracks or mutilation of firing pin striking surface	Visual	3.7	100%
9.	Hammer Group. Mutilation, distortion or improper seating of hammer spring.	Visual	3.7	100%
10.	Hammer Group. Failure of Burst control cam to index to next tooth every time hammer is cocked. Missing lubricant.	Visual and Manual	3.7	100%
11.	Hammer Group. Improperly assembled or missing hammer pin retaining spring	Visual	3.7	100%
12.	Trigger Group. Burrs, cracks or mutilation of hammer catch surface and safety contact surface.	Visual	3.7	100%
13.	Trigger Group. Mutilation distortion, or improper assembly of trigger spring.	Visual	3.7	100%
14.	Trigger Group. Improper functioning of disconnects due to missing or deformed disconnect springs.	Manual	3.3.2.6 & 3.7	100%
15.	Selector Group. Failure of spring loaded detent plunger to positively engage selector lever, when lever is in "SAFE", "SEMI", and "BURST" positions.	Manual	3.3.2.3	100%

DEFECT NO.	DEFECT	INSP. METHOD	REQUIRE-MENT	SAMPLING PROCEDURE
16.	Selector Group. Burrs, cracks or mutilation of selector lever, disconnects and sear contact surfaces. Missing lubricant.	Visual	3.7 & Drawing	100%
17.	Bolt Catch Group. Failure of catch to pivot upward when lower button is pressed and failure of catch to return to original position under spring load when pressure of button is released.	Manual	3.3.2.4	100%
18.	Bolt Catch Group. Burrs, cracks, or mutilation of bolt contact surfaces.	Visual	3.7	100%
19.	Magazine Release Button. Improper adjustment of magazine release button	Visual	3.3.2.5	100%
20.	Trigger Guard Assembly. Failure of trigger guard to release, pivot to stop position against pistol grip, retain this position without manual assistance, then return to its locked position and lock.	Manual	3.3.2.8	100%
21.	Pistol Grip. Insecurely attached or interfaces with selector lever.	Visual and Manual	3.3.2.10	100%
22.	Buffer Retainer Group. Improper spring load action of buffer retainer or failure of retainer to retain buffer assembly.	Manual	3.3.2.12	100%

DEFECT NO.	DEFECT	INSP. METHOD	REQUIRE-MENT	SAMPLING PROCEDURE
23.	Buffer Retainer Group. Burrs, cracks or mutilation of buffer retainer.	Visual	3.7	100%
	REMOVE: Buffer and Action Spring			
24.	Buffer. Burrs, cracks or mutilation of buffer.	Visual	3.7	100%
25.	Action Spring. Distortion or mutilation of action spring	Visual	3.7	100%
26.	Pistol Grip. Missing lock washer, cracks or mutilation of pistol grip.	Visual	3.7	100%
27.	Buttstock Assembly. Cracks or mutilation of stocks.	Visual	3.7	100%
* 28.	Buttstock Assembly. Improper assembly of stock.	Visual & Manual	3.3.2.11	100%
	REASSEMBLE: Buffer Assembly.			
* 29.	Buffer Group. Failure of buffer to function throughout full range without binding.	Manual	3.3.2.12	100%
30.	Lower Receiver. Burrs, cracks or mutilation of magazine well and trigger mechanism housing area.	Visual	3.7	100%

DEFECT NO.	DEFECT	INSP. METHOD	REQUIRE-MENT	SAMPLING PROCEDURE
	Upper Receiver Group.			
31.	Charging Handle Assembly. Failure of charging handle assembly to have positive latching action to upper receiver during forward travel without manual assist to latch and to require manual action to unlatch for rearward travel.	Manual	3.3.4.3	100%
32.	Charging Handle Assembly. Falure of charging handle assembly to disassemble from upper receiver without binding.	Manual	3.3.4.3	100%
33.	Charging Handle Assembly. Burrs, cracks or mutilation of latch contact surfaces, carrier key engagement surface and guide surface.	Visual	3.7	100%
	REMOVE: Bolt and Bolt Carrier Group and Inspect for Defect No. 53			
	DISASSEMBLE: Bolt Carrier Group Mark Orientation of Cam Pin			
34.	Firing Pin Retaining Pin. Burrs, cracks or mutilation.	Visual	3.7	100%
35.	Firing Pin. Burrs, cracks or mutilation of striker point.	Visual	3.7	100%
36	Firing Pin. Pits or erosion of striker point.	Visual	3.7	100%

DEFECT NO.	DEFECT	INSP. METHOD	REQUIRE-MENT	SAMPLING PROCEDURE
37.	Bolt Cam Pin. Failure to be removed from bolt carrier without binding or without removal of carrier key.	Manaul	3.3.4.4.3	100%
38.	Bolt Cam Pin. Burrs, cracks or mutilations.	Visual	3.7	100%
39.	Extractor. Burrs, cracks or mutilation of extractor lips.	Visual	3.7	100%
40.	Extractor. Not properly retained by pin.	Visual	3.3.4.4.1	100%
41.	Extractor Assembly. Improper function of extractor spring assembly action.	Manual	3.3.4.4.1	100%
42.	Ejector. Improper function of ejector spring action.	Manual	3.3.4.4.2	100%
43.	Ejector. Burrs, cracks or mutilation of ejector tip.	Visual	3.7	100%
44.	Ejector Retaining Pin. Improper assembly. Both ends must be flush with or below bolt surfaces.	Visual	3.3.4.4.2	100%
45.	Bolt Ring. Mutilated, distorted or improperly positioned. (Ring gaps shall not be positioned in line.)	Visual	3.7	100%
46.	Bolt. Burrs, cracks or mutilation of bolt cartridge face, bearing surface, locking lugs or bolt ring slot.	Visual	3.7	100%

DEFECT NO.	DEFECT	INSP. METHOD	REQUIREMENT	SAMPLING PROCEDURE
47.	<u>Bolt</u>. Pits or erosion of cartridge seat. * Improper chamfer on feed lugs.	Visual	3.7	100%
48.	<u>Bolt</u>. Missing proof marks for magnetic particle and proof firing inspection.	Visual	3.6	100%
49.	<u>Bolt</u>. Missing swagged operation on cam pin hole permitting improper assembly of bolt into bolt carrier.	Manual	3.3.4.4	100%
50.	<u>Key</u>. Failure of key to be properly seated on bolt carrier or improper staking of bolt carrier key screws.	Visual	3.3.4.1	100%
51.	<u>Key</u>. Burrs, cracks or mutilation.	Visual	3.7	100%
52.	<u>Bolt Carrier</u>. Burrs, cracks or mutilation (Particular attention should be given to bolt cam area.) Improper serrations.	Visual	3.7	100%
	<u>REASSEMBLE: Bolt and Carrier Group with Cam Pin Orientation Reverse 180°.</u>			
53.	<u>Firing Pin</u>. Failure of firing pin to move freely when assembled to the bolt and bolt carrier.	Manual and Visual	3.3.4.2 and 3.3.4.4.3	100%

DEFECT NO.	DEFECT	INSP. METHOD	REQUIRE-MENT	SAMPLING PROCEDURE
54.	Bolt and Bolt Carrier Group. Improper firing pin protrusion. Upper Receiver and Barrel Assembly Group.	Gage	3.3.4.2	100%
55.	Handguards. Failure of handguards to disassemble and assemble or failure to be properly retained.	Manual	3.3.3.3	100%
56.	Handguards. Cracks or mutilation.	Visual	3.7	100%
57.	Compensator. Burrs, cracks or mutilation.	Visual	3.7	100%
58.	Compensator. Insecurely assembled to rifle.	Manual	3.3.3.8	100%
59.	Front Sight. Insecurely assembled to barrel.	Manual	3.3.3.4	100%
60.	Front Sling Swivel. Insecurely assembled to front sight.	Manual	3.3.3.9	100%
61.	Front Sling Swivel. Failure to pivot without binding.	Manual	3.3.3.9	100%
62.	Front Sight Post Group. Failure of front sight post to be positioned flush to not more than .030 inches below front sight flange after rifle is zeroed. Sixteen clicks of downward travel shall remain after zeroing. Rotate sight downward and return to approximate original setting. This inspection may be done during	Gage and Manual	3.3.3.4	100%

DEFECT NO.	DEFECT	INSP. METHOD	REQUIREMENT	SAMPLING PROCEDURE
	pre-function check in order not to disrupt zero setting obtained during target and accuracy test firing. (See 4.7.6.)			
63.	Front Sight. Burrs or deformation.	Visual	3.7	100%
64.	Front Sight. Illegible marking. Missing MIL-L-46000.	Visual	3.6 and Drawing	100%
65.	Front Sight. Failure to meet approved functional bayonet gages.	Gage	3.3.3.4	100%
66.	Gas Tube. Failure to securely assemble gas tube so there is no relative movement between gas tube and front sight.	Manual	3.3.3.2	100%
67.	Gas Tube. Failure to align properly with carrier key.	Manaul	3.3.3.2	100%
68.	Gas Tube. Mutilation.	Visual	3.3.3.2	100%
69.	Barrel Assembly. Pockets, rings, bulges or other deformations in bore or chamber. Particular attention shall be given muzzle compensator shoulder area of bore for rings or bulges.	Visual	3.3.3.1	100%
70.	Barrel Assembly. Burrs, cracks or mutilation of bolt locking lugs.	Visual	3.7	100%

DEFECT NO.	DEFECT	INSP. METHOD	REQUIRE-MENT	SAMPLING PROCEDURE
71.	Barrel Assembly. Missing proof marks, magnetic particle stamp and chrome chamber marking.	Visual	3.6	100%
72.	Barrel Assembly. Failure grenade launching diameter of flash suppressor to meet approved gage.	Gage	Drawing	100%
73.	Barrel Assembly Straightness. Failure of barrel to meet approved "go" bore 6 inch drop gage.	Gage	3.3.3.1.1 and Drawing	100%
74.	Ejection Port Cover Assembly Group. Burrs or deformations.	Visual	3.7	100%
75.	Ejection Port Cover. Failure to be manually closed.	Manual	3.3.3.6	100%
* 76.	Ejection Port Cover Assembly Group. Improperly assembled port cover assembly spring.	Visual	3.3.3.6 & drawing	100%
77.	Rear Sight. Failure of windage knob to rotate. Knob shall be capable of rotating seven (7) complete revolutions moving rear sight from extreme left or extreme right. (This examination may be accomplished during the prefunctional check in order not to disrupt the optimum sight setting obtained during the targeting and accuracy firing test.)	Manual	3.3.3.5	100%

DEFECT NO.	DEFECT	INSP. METHOD	REQUIREMENT	SAMPLING PROCEDURE
78.	Rear Sight. Failure of rear peep sight to pivot from normal and short peeps when sight is in any horizontal position including the extreme positions. (This examination may be accomplished during the pre-functional check in order not to disrupt the optimum sight setting obtained during the targeting and accuracy firing test.)	Manual	3.3.3.5	100%
79.	Rear Sight. Improper marking on windage knob.	Visual	3.6	100%
80.	Rear Sight. Improper marking on sight.	Visual	3.6	100%
* 81.	Rear Sight. Failure of elevation knob to rotate from "8/3" (three hundred meter setting) to "8/3" (eight hundred meter setting). Elevation knob should not be capable of being rotated more than one (1) click below "3" (low setting).	Manual	3.3.3.5	100%
82.	Upper Receiver. Burrs, cracks or deformations.	Visual	3.7	100%
* 83.	Forward Assist Pawl. Burrs, cracks or deformations of bolt carrier contact surfaces.	Visual	3.7	100%

DEFECT NO.	DEFECT	INSP. METHOD	REQUIRE-MENT	SAMPLING PROCEDURE
* 84.	Forward Assist Assembly. Failure to be depressed and return to extended position under spring action without binding.	Manual	3.3.3.7	100%
85.	Forward Assist Pawl. Failure to be depressed and return under spring action without binding.	Manaul	3.3.3.7	100%
	REASSEMBLE: Rifle.			
86.	Rifle Assemble. Failure to meet headspace requirement.	Gage	3.4.1	100%
	Examine for defect numbers 87 through 95 by cyclic hand function of rifle using one dummy round in the magazine.			
87.	Failure of ejection port cover to open when bolt carrier is moved between rearward and forward position.	Manual	3.3.3.6	100%
88.	Failure of bolt to remain rearward when bolt catch is raised.	Manual	3.3.2.4	100%
89.	Failure of bolt to strip cartridge from magazine and feed cartridge into chamber when bolt returns to battery when magazine is inserted and bolt catch is depressed.	Manual	3.3.2.4	100%
90.	Failure of magazine to be securely retained by rifle.	Manual	3.3.2.5	100%

DEFECT NO.	DEFECT	INSP. METHOD	REQUIRE-MENT	SAMPLING PROCEDURE
91.	Failure of bolt when charged to extract and eject dummy cartridge and cause follower of magazine to activate bolt catch to retain bolt in rear.	Manual	3.3.2.4 3.3.4.4.1 3.3.4.4.2	100%
92.	Failure of magazine to be ejected without binding, with spring assist from the bolt catch, when magazine release button is depressed.	Manual	3.3.2.5	100%
93.	Failure of bolt to be released, when bolt catch is depressed.	Manual	3.3.2.4	100%
94.	Failure of trigger return after partial or complete trigger pull.	Manual	3.4.3	100%
95.	Lower Receiver. Missing or illegible receiver markings (serial number manufacturer's identification, selector markings, etc.)	Visual	3.6	100%
96.	Rifle Assembly. Failure to meet trigger pull requirement	Gage	3.4.3	100%
97.	Rifle Assembly. Fires with selector level on "SAFE". (With hammer cocked and selector lever set on "SAFE" the trigger shall not release the hammer when trigger is pulled.)	Manaul	3.3.2.3	100%

DEFECT NO.	DEFECT	INSP. METHOD	REQUIRE- MENT	SAMPLING PROCEDURE
98.	Rifle Assembly. With selection lever on "SEMI", fires when trigger is released. (With selector lever set on "SEMI", charge the bolt with charging handle, maintaining pressure on the trigger. When bolt enters battery position, the hammer shall not have fallen, but shall be retained in the cocked position by the disconnect. Release finger pressure on trigger shall allow hammer to disengage from disconnect but not from trigger. Pulling trigger then causes hammer to fall.)	Manaul	3.3.2.3	100%
99.	Rifle Assembly. Failure to cycle through three shot burst with selector lever set on "BURST". (1. With selector lever set on "BURST", hold pressure on trigger and pull back and release charging handle three (3) times. Release trigger. 2. Pull trigger, hammer should fall. 3. Hold pressure on trigger and pull back and release charging handle, hammer should fall when bolt returns to battery position. 4. Maintain pressure on trigger, pull back and release charging handle, hammer should fall when bolt returns to battery position. 5. Maintain pressure on trigger	Manaul	3.3.2.3	100%

DEFECT NO.	DEFECT	INSP. METHOD	REQUIRE-MENT	SAMPLING PROCEDURE
	and pull back and release charging handle, hammer should NOT fall. 6. Release trigger, pull trigger; hammer should fall.)			
100.	* Rifle Assembly. Failure of forward assist assembly pawl to engage bolt carrier (Manual engagement of the forward assist assembly with the bolt carrier notches at any point shall prevent retraction of the bolt carrier assembly). With bolt carrier assembly retracted about one-fourth inch, as determined from the front of bolt carrier to the front of the receiver ejection port, and movably retained by the charging handle assembly, depressing and releasing of the forward assist assembly shall cause progressive movement of bolt carrier to battery position.)	Manual	3.3.3.7	100%

4.5.2.2.1 Inspection approval stamp. Rifles which have passed all examinations after successful completion of testing shall be rubber stamped by the contractor with the Department of Defense complete inspection approval stamp on the lower right hand * side of the lower receiver, or the forward face of the magazine well. The Government representative will control the stamps used for such stampings required to assure successful completion of all required examinations and tests.

4.5.2.3 Component parts and concurrent repair parts. Examination of component parts and concurrent repair parts shall be performed in accordance with the criteria as specified in the contract (see 6.1). Examination of these parts shall be accomplished prior to their assembly into the end item or submitting for acceptance as repair parts.

4.5.2.4 Packaging. Examination of packaging of rifles shall be performed in accordance with the classification of defects and acceptable quality level (AQL) specified in TABLE II[1]. Sample size for each lot shall be in accordance with Inspection Level I of MIL-STD-105 or a continuous sampling plan of MIL-STD-1235 which will provide equivalent discrimination. A visual inspection shall be performed to assure that the criteria specified in the contract (see 6.1) result in the parts and packages meeting the acceptable quality level. Packages opened for examination shall be repackaged by the contractor at the contractor's expense (see 6.1).

TABLE II. Classification of defects for packaging.

CATEGORIES	DEFECTS[2]	AQL[3]
Major	(Interior Packaging	
101	Illegible or incorrect marking	1.5
102	Improper level of packaging	
103	Missing rifle components (magazine and sling)	
104	Improper cleaning and drying	
105	Improper preservative application and drainage	
106	Missing or improper protectors	
107	Improper assembly of unit package	
108	Improper closure boxes	
109	Improper positioning of upper and lower receiver assemblies	
110	Failure to unit package matching upper and lower receiver assemblies	
Major	(Exterior Container)	
101	Illegible or incorrect marking	1.0
102	Improper level of packing	
103	Improper closure of box	
104	Improper closure and strapping of shipping containers	

[1]Unless otherwise specified in the contract, the packaging requirements are specified on Packaging Data Sheet 9349000 as applicable.

[2]Examination for packaging defects specified above shall apply to each sample of rifles, interior packages or exterior containers as applicable.

[3]The AQL is specified as percent defective and shall be applied to a group of defects, not to an individual defect.

4.5.2.4.1 Repair parts. Examination of packaging of repair parts shall be performed in accordance with the criteria specified in the contract (see 6.1).

4.5.3 Testing.

4.5.3.1 Rifle Testing. Individual rifles shall be subjected to the test specified in TABLE III. Inspection lots of rifles shall be subjected to the test specified in TABLE IV. Sample size, acceptance criteria and test methods for each test shall be as specified in TABLE III and TABLE IV. The Government representative shall randomly select rifles to be subjected to the endurance test and interchangeability test from inspection lots that met the requirements of 4.5.2. Component parts to be subjected to the concurrent repair parts interchangeability test shall be randomly selected from accepted component inspection lots concurrently being used in the assembly of the rifles.

TABLE III. Individual rifle tests.

TEST	SAMPLE[1]	ITEM	REQUIREMENT	TEST METHOD
Headspace[4]	100%	Rifle	3.4.1	4.7.1
Trigger Pull[4]	100%	Rifle	3.4.3	4.7.3
High-Pressure Resistance	100%	Barrel Assy & Bolt	3.4.4	4.7.4
Function[2] Cyclic rate of fire	100% 190[3]	Rifle	3.4.5	4.7.5
Targeting & Accuracy	100%	Rifle	3.4.6	4.7.6

[1]Rifles failing to meet the applicable requirement shall be rejected.

[2]Magazines may be used twice provided that excessive oil and shop dirt are removed from the magazine prior to repackaging.

[3]The cyclic rate of fire shall be taken and recorded on each rifle until 190 consecutive rifles have met the cyclic rate of fire requirement specified in 3.4.5. When 190 consecutive rifles on their initial test have met the cyclic rate of fire requirement, every 10th rifle tested for function firing requirements shall be tested for cyclic rate of fire requirement. If a rifle fails to meet the cyclic rate of fire requirement during sample testing of one of every ten, an additional sample of ten rifles shall be tested for cyclic rate. The 10 rifles tested shall meet the cyclic rate of fire specified in 3.4.5. If one or more rifles fail to meet the requirements, the contractor shall return to 100% testing of each rifle for cyclic rate of fire until qualification requirements are met prior to returning to testing one in ten rifles. However, if the cyclic rate requirements for the sample of ten rifles are met, the contractor shall continue testing every 10th rifle for cyclic rate.

[4]This test shall be conducted during the final examination specified in 4.5.2.1.

TABLE IV. Inspection lot tests.

TEST	SAMPLE[1]	SAMPLE FOR RESUBMITTED LOTS	REQUIRE-MENTS	TEST METHOD
Firing Pin Indent[2]	32[4]	32	3.4.2	4.7.2
Interchangeability			3.5	4.7.7
Inplant				
Rifles	10[4]	20		
Repair Parts[5]	5	10		
Interplant				
Rifles[6]	5	--		

Endurance				
Rifles	4[7]	4	3.4.7	4.7.8
Magazines[3]	80 (30 Rnd)	80 (30 Rnd)		

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[1]Failure of the sample, unless otherwise specified in the applicable test method to meet the requirements shall cause rejection of the represented lot.

[2]Failure of one rifle in the sample of thirty-two to meet the requirements shall cause a second sample to be tested from the same lot. The second sample shall consist of thirty-two rifles, exclusive of the first thirty-two, (cumulative, sixty-four rifles). Failure of two or more rifles in the first sample or the combined first and second sample shall be cause for rejection of the represented lot.

[3]The 30 round magazines selected for the endurance test shall be visually and manually inspected by the contractor for workmanship and completeness of assembly and determined to be satisfactory prior to test.

[4]When five successive inspection lots meet the requirements, the sample shall be selected from groups of five consecutive lots or a week's production, whichever is larger. If rejection of a group of five lots or a week's production occurs at any time, the inspection lot size of 1,000 shall be reinstated and the above procedure repeated in returning to the five lot (or larger) groups.

[5]The sample shall be selected from each inspection lot of repair parts.

[6]When rifles are produced concurrently by more then one manufacturer, each manufacturer shall forward five rifles monthly (see 6.1) for the interplant interchangeability test. The contractor will be informed of any failure of the rifles to meet the prescribed requirements.

[7]When five successive inspection lots meet the requirements, the sample shall be selected from groups of five consecutive lots or a week's production, whichever is greater. If rejection of a group of five lots (or more) occurs due to an identifiable Class II or III malfunction cause, to an identifiable Class I malfunction cause which is prevalent in the lot, or failure of a retested lot, the inspection lot size of 1,000 shall be reinstated and the above procedure repeated in returning to the five lot (or larger) group. (For definition of Class I, II, and III see 6.5.5.)

4.5.3.2 Component parts and concurrent repair parts testing. Raw material testing, part testing, and certification shall be in accordance with the criteria specified in the contract (see 6.1). This will include chemical analysis and physical tests of materials, and tests of protective finish, heat treatment, and function of parts as applicable. The contractor shall accomplish these tests prior to assembly of component parts into the end item and acceptance as concurrent repair parts.

4.5.3.3 Packaging testing.

4.5.3.3.1 Rifles.

4.5.3.3.1.1 Materials. The contractor shall have available for review by the Government representative a statement of findings that the packaging materials conform to the applicable Packaging Data Sheets and specifications.

4.5.3.3.1.2 Determination of cleanliness testing. The contractor shall test items from each inspection lot for determination of cleanliness using the test method specified in 4.7.9.1. Sampling shall be in accordance with MIL-P-116.

4.5.3.3.2 Repair parts. Testing of packaging of repair parts shall be performed in accordance with the criteria specified in the contract (see 6.1).

4.6 Inspection equipment. Unless otherwise specified (see 6.1), responsibilities for acquisition, maintenance and disposition of measuring and testing equipment prescribed on lists contained in the Index to Inspection Equipment Lists, IEL 9349000 and for all other inspection equipment required to perform inspection prescribed herein and by other applicable specifications, shall be in accordance with MIL-I-45607.

4.7 Methods of Inspection.

4.7.1 Headspace test. This test shall be performed during individual rifle testing in accordance with TABLE III using Government approved gages.

4.7.1.1 Minimum gage. The bolt shall be moved rearward to the open position. The minimum headspace gage shall be inserted in the chamber and the bolt shall be returned to the battery position. Only finger pressure shall be applied to close the bolt. To be acceptable the bolt shall fully close.

4.7.1.2 Maximum gage. The bolt shall then be retracted to the open position and the minimum headspace gage removed from the chamber. The maximum headspace gage shall be inserted in the chamber and the bolt returned to the battery position. Only finger pressure shall be used to close the bolt. To be acceptable the bolt shall not fully close.

4.7.1.3 Dimensional inspection. If the above results are in dispute, the rifle shall be disassembled and the 1.6206 + .0030 barrel dimension and the .156 - .003 bolt dimension shall be measured to determine compliance with the drawing requirements.

4.7.2 Firing pin indent test. This test shall be performed during inspection lot testing in accordance with TABLE IV utilizing Government approved chamber adapters and Government furnished copper compression cylinders for insertion in the barrel chamber.

4.7.2.1 Firing mechanism indent. The rifle shall be held in a vertical position (muzzle down) with the muzzle end supported. The bolt shall be retracted to the rearward position and held open. A zero indicator reading shall be made on the height of the copper pressure cylinder before insertion into the chamber adapter. The chamber adapter containing the copper compression cylinder shall then be inserted in the barrel chamber. The bolt shall be manually returned to the battery position, the trigger shall be pulled to release the hammer and indent the copper compressions cylinder. The chamber adapter shall be removed from the barrel chamber and the depth of the indent on the copper compression cylinder computed by measuring the distance from the original zero indicator reading to the bottom of the firing pin impression. The indent impression shall be visually examined to determine if the concentricity requirement has been met.

4.7.2.2 Bolt action indent. The bolt shall again be retracted to the open rearward position and held open. A zero indicator reading shall be made on the height of the copper compression cylinder before insertion into the chamber adapter. The chamber adapter containing the copper compression cylinder shall then be inserted in the barrel chamber. The bolt shall be returned to the battery position under spring action. The trigger shall not be pulled. The chamber adapter shall be removed from the barrel chamber and the depth of the indent in the copper compression cylinder computed by measuring the distance from the original zero indicator reading to the bottom of the firing pin impression.

4.7.2.3 Recording of data. The following data shall be recorded:

a. Rifle serial number.
b. Inspection lot number.
c. Computed measurement of firing pin indent for both firing mechanism released and not released.

4.7.3 Trigger pull test. This test shall be performed during individual rifle testing in accordance with TABLE III using Government approved inspection equipment.

4.7.3.1 Minimum load. The rifle shall be cocked and the selector lever placed in the "SEMI" position. The minimum load shall be gradually applied to the center of the trigger and exerted in line parallel to the axis of the barrel bore. To be acceptable, the hammer shall not release.

4.7.3.2 Maximum load. The rifle shall be cocked and the maximum load shall be gradually applied to the center of the trigger as before. To be acceptable, the hammer shall release.

4.7.3.3 Creep. The rifle shall also be manually tested to assure that the trigger pull is free of creep (see 3.4.3) and that the trigger returns under spring action to its normal forward position after partial or complete trigger pull.

4.7.4 High-pressure resistance test. This test shall be performed during individual rifle testing in accordance with TABLE III, using a Government approved fixture for holding the bolt and barrel assembly.

4.7.4.1 Test cartridge. One (1) high-pressure test cartridge (see 3.4.4) shall be fired in each bolt and barrel assembly. Unless otherwise specified, the bolt and barrel assembly shall be tested concurrently. After proof firing, cartridge cases shall be examined for bulges, splits, rings and other defects caused by defective chambers of the barrel assembly.

4.7.4.2 Barrel inspection. The barrel assembly shall be magnetic particle inspected in accordance with MIL-STD-1949 utilizing a current of 400 to 500 amperes for circular continuous magnetization. The barrel assembly shall be examined for evidence of cracks, seams and other injurious defects.

4.7.4.3 Bolt inspection. The bolt shall be magnetic particle inspected in accordance with MIL-STD-1949 utilizing standard five turn magnetizing coil with a currrent of 200 to 300 amperes. Both circular and longitudinal continuous magnetization with wet fluorescent solution shall be used. The bolts shall be examined for evidence of cracks, seams and other injurious defects.

4.7.4.4 Proof markings. Proof marks and magnetic particle inspection marks shall be applied on barrel assemblies and bolts that have passed this test.

4.7.5 Function firing test. This test shall be performed during individual rifle testing in accordance with TABLE III, and shall be accomplished with the rifles held in a Government approved firing stand simulating shoulder firing. The ammunition used on this test shall be as specified in 3.4.5, except that the ammunition used in semi-automatic firing shall be as specified in 3.4.6.

4.7.5.1 Lubrication. The rifles shall be prepared for firing using lubricant in accordance with MIL-L-63460 (CLP). Apply a light coat of oil to all surfaces of the bolt carrier group. Apply one drop of oil in each hole on the right side of the bolt carrier and in the open end of the bolt carrier key. (Do not apply excessive oil in the bolt firing pin recess.) Apply a moderate coat of oil on all firing mechanism components in lower receiver.

4.7.5.2 Pre-firing. The rifle shall be given a pre-firing examination to assure that no safety hazard exists.

4.7.5.3 Firing procedure. The selector lever of the rifle shall be set in "SAFE" position and shall be checked to assure that the rifle cannot be fired.

4.7.5.3.1 Burst firing. The selector lever shall be set on "BURST" for burst firing. The rifle shall be fired using a fully loaded 30 round magazine by pulling the trigger and holding rearward until it stops firing. The first trigger pull shall fire one, two or three rounds. Each successive trigger pull shall fire three (3) rounds as long as the trigger is held fully rearward during the entire three round burst. The last trigger pull when the magazine is emptied shall be a one, two or three round burst. Failure of the rifle to produce a three round burst on any trigger pull other than the first or last shall be cause for rejection and recorded as malfunction.

4.7.5.3.2 Cyclic rate of fire. When rifles are required to be tested for cyclic rate of fire, this test shall be conducted in conjunction with the burst firing test of 4.7.5.3.1. The cyclic rate of fire measurement shall be taken on a three round burst, occuring on the fourth or fifth trigger pull when using a 30 round magazine, while the selector lever is set on "BURST". The cyclic rate of fire shall be measured using a Government approved timing gage and shall be recorded.

4.7.5.3.3 Semi-automatic firing. The selector lever shall be set on "SEMI" for semi-automatic firing. Ten rounds shall be fired. The semi-automatic firing shall be accomplished simultaneously with the targeting and accuracy test specified in

4.7.6. During semi-automatic firing, rifles shall be checked to assure that no doubling occurs (i.e., two shots fired with a single trigger pull). Doubling shall be recorded as a malfunction and shall be cause for rejection.

4.7.5.3.4 Manual examination. Manually examine function of magazine catch and visually examine function of bolt catch in assisting magazine ejection. Depressing of magazine catch button shall cause the magazine assembly to be ejected, with spring assist from bolt catch, without binding.

4.7.5.3.5 Malfunctions. Malfunctions that are not attributable to rifles as a result of failure analysis and verified by the Government representative shall not be counted against the rifle; however, such malfunctions shall be recorded.

4.7.5.3.6 Recording of data. The following data shall be recorded:

a. Number of rifles tested and number of rifles rejected per shift.
b. Test data.
c. Ammunition lot number.
d. For each rifle that fails, record the following data:

    1. Serial number
    2. Type of malfunction or failure (see 6.5).
    3. Class of malfunction (see 6.5.5).
    4. Round number at which failure occurred.
    5. Type of firing (semi-automatic or burst)
    6. Round number of magazine at which failure occurred.
    7. Type of magazine used (30 round magazine)

e. Ammunition defect

    1. Rifle in which ammunition defect occurred.
    2. Description of defect.

4.7.5.4 Rejected rifles.

4.7.5.4.1 Correction. Rifles rejected because of malfunction or unserviceable part during the test shall be corrected by the contractor and the corrective action shall be recorded. In the event the malfunction cause is classified as Class II or Class III (see 6.5.5), the contractor shall immediately initiate action in accordance with 4.7.5.5.2.1.

4.7.5.4.2 Retest. The rifles shall be retested by firing two (2) thirty round sequences in accordance with 4.7.5.3.1 and the cyclic rate shall be recorded. The rifle shall operate without malfunction or unserviceable parts and shall meet the cyclic rate of fire requirements.

4.7.5.4.3 Second retest. In the event the rifles fail in the retest, the procedure in 4.7.5.4.1 shall be followed. The rifles shall be retested, by firing three (3) thirty round sequences in accordance with 4.7.5.3.1 and 4.7.5.3.3 and the cyclic rate shall be recorded. Rifles shall operate without malfunction or unserviceable parts and shall meet the cyclic rate of fire requirements.

4.7.5.5 Process control criteria.

4.7.5.5.1 Process average. The process average for total rifles tested for function firing during one shift shall not exceed 2.0% defective. This process average for each shift shall be maintained and be available for Government review.

4.7.5.5.2 Failure classification. When the process average exceeds 2.0% defective during one shift, the contractor shall review the failure causes for determination of a seriousness, Class I, II or III malfunction (see 6.5.5). The contractor, in addition, shall provide the government representative with objective evidence of his determination.

4.7.5.5.2.1 Class II or III malfunction. When the malfunction cause is classified as Class II or III, the contractor shall institute corrective action in the manufacturing processes and associated quality control procedures to preclude recurrence of the cause and to assure that all rifles and components containing similar defects are purged from the prime and vendor or prime or vendor facilities. When authorized by the Government representative, this corrective action need not include the screening of rifles previously tested for function firing. Upon completion of the preceding, the contractor shall recondition the rejected rifles and retest the rifles as specified in 4.7.5.4.2.

4.7.5.5.2.2 Class I malfunction. When the malfunction is classified as Class I or the malfunction cause cannot be determined, the contractor shall correct the rejected rifles and shall test the first eighty rifles on the following shift by firing two thirty round sequences in accordance with 4.7.5.4.2. When the number of malfunctions occurring during the test of eighty rifles exceeds one, the contractor shall continue function firing acceptance testing in accordance with 4.7.5.4.2 until corrective action has been accomplished to the applicable manufacturing process or quality assurance procedures or both, as evidenced by the testing of eighty consecutive rifles with one or less malfunctions. In the event the malfunction number is one or less during this test, normal function firing testing shall be resumed for all subsequent rifles submitted during this shift.

4.7.6 Targeting and accuracy test. This test shall be performed simultaneously with the semi-automatic firing of the function firing test (see 4.7.5.3.3) and in accordance with individual rifle test of TABLE III. A Government approved firing stand simulating shoulder firing, and targets in accordance with Figure 1 shall be used. The ammunition used in this test shall be as specified in 3.4.6.

4.7.6.1 Preparation for firing. The front and rear sights shall be set as specified in 3.4.6.

4.7.6.1.1 Warm-up shots. Except for rounds fired during function testing, firing of not more than three (3) warm-up shots off the test target shall be allowed before the rifles are tested for targeting and accuracy.

4.7.6.2 Firing procedure. The selector lever shall be set on "SEMI" and the firing sights shall be aligned on the point of aim specified in Figure 1. Ten rounds shall be fired. The target shall then be checked to determine that the targeting and accuracy requirements have been met (see 3.4.6 and Figure 1). Targets with evidence of a flyer (see 6.5.2) or keyholing (see 6.5.3) shall be cause for the contractor to repeat the test by firing a ten round complement.

4.7.6.2.1 Sight setting. The optimum sight setting obtained during the targeting and accuracy test shall be maintained on accepted rifles being prepared for shipment.

4.7.6.2.2 Recording data. The following data shall be recorded:

a. Number of rifles tested and number of rifles rejected per shift.
b. Test date.
c. Ammunition lot number.
d. Extreme spread of shot group.
e. Reason for retest (flyer and keyholing).
f. For each rifle that fails, record the following:

    1. Serial number.
    2. Type of malfunction or failure (see 6.5).
    3. Type of magazine (30 round magazine).

4.7.6.3 Rejected rifles. Rifles rejected for failure to meet the targeting and accuracy requirements shall be corrected by the contractor and the corrective action shall be recorded.

4.7.6.3.1 Retest. Corrected rifles shall be retested by firing a ten round complement at each of two targets. The targets shall be checked to determine that both targets meet the targeting and accuracy requirements. The rate of fire will be at the contractor's option.

4.7.6.3.2 Rejection. If the retested rifle fails to meet the requirements for both targets, the rifle shall be rejected. If the rifle fails to meet only the accuracy requirements for one of the two targets, a ten round complement shall be fired at a third target. The targets shall be checked to determine that the average of the extreme spreads for the three targets meets the accuracy requirements.

4.7.6.3.3 Second retest. Rifles failing the retest shall again be corrected by the contractor and the corrective action recorded. The rifle shall then be retested by firing a ten round complement at each of three targets. The targets shall be checked to determine that the average of the extreme spreads for three targets meets the accuracy requirements. If the retested rifle fails to meet the requirements for third target, the rifle shall be rejected.

4.7.6.4 Process control criteria.

4.7.6.4.1 Process average. The process average for total rifles tested for targeting and accuracy on one shift shall not exceed 6.0% defective for each requirement. If 6.0% is exceeded, the first eighty rifles submitted for testing during the succeeding shift shall be tested for the requirement that exceeded the process limit, by firing a ten round complement at each two targets in accordance with 4.7.6.3.1.

4.7.6.4.2 Increased testing. When the number of failures occurring during the test of eighty rifles exceeds four for either of the requirements, the contractor shall continue targeting and accuracy testing in accordance with 4.7.6.3.1 until corrective action has been accomplished to the applicable manufacturing process and quality assurance procedures as evidenced by testing of 80 consecutive rifles as specified in 4.7.6.3.1 with four or less failures.

4.7.6.4.3 Normal testing. In the event four or less failures occur during the test of eighty rifles, the normal targeting and accuracy testing shall be resumed for all subsequent rifles submitted during the shift.

4.7.7 Interchangeability test.

4.7.7.1 Implant.

4.7.7.1.1 Rifles. The interchangeability test shall be performed during inspection lot testing in accordance with TABLE IV. Rifles shall be tested for interchange of parts by disassembly and reassembly of parts using parts from a prearranged system specified below. Interchange of parts shall be accomplished by dividing the parts of each rifle into 10 groups of

nonmating parts as shown below and distributing the groups into 10 different trays until each tray contains a complete rifle. Groups of parts from rifle number 1 shall be taken in order and placed in trays 1 through 10; groups of parts from rifle number 2 shall be taken in order and placed in trays 2 through 10 to 1; groups of parts from rifle number 3 shall be taken in order and placed in trays 3 through 10 to 2, etc. The rifles shall be reassembled using only those parts which are in the same tray. The reassembled rifles shall be tested for head-space, firing pin indent, trigger pull, function firing (including cyclic rate of fire), and accuracy tests specified in methods of inspection 4.7.1, 4.7.2, 4.7.3, 4.7.5 and 4.7.6 respectively. Disposition of interchangeability rifles shall be as specified in the contract (see 6.1).

Group I

Takedown Pin Detent (8448585) (2).
Receiver, Upper (9349063)
* **Rear Sight Spring Pin (MS16562-103).
Magazine Catch Spring (8448637).
* Trigger Subassembly (9392518)
Front Sight Post (9349056).
* Lock Washer (MS35335-61)
* Buttcap Spacer (9349129)

Group II

Lower Receiver (9349102).
Barrel and Front Sight Assembly
Permanent assembly of:
Barrel (9349054)
Barrel Extension (8448550),
Barrel Indexing Pin (8448551)
Front Sight (9349058),
Taper Pin (8448575) (2),
Handguard Cap (9349053),
Tubular Rivet (8448697),
Sling Swivel (8448571),
Nut Barrel (8448553).
Extractor Pin (8448513).
**Butt Cap Screw (9349128).
Ejection Port Cover Assy (8448525).

Group III

Receiver Extension (8448581).
Bolt (8448510) w/Bolt Rings (8448511) (3).
Ejection Port Cover Pin (8448533) & Snap Ring (8448664)
* **Trigger Guard Pivot Pin
* (MS16562-129).
Trigger Spring (8448593).
Takedown Pin (8448584)
* Magazine Release Button
* (8448636).
* **Spring Pin (MS16562-121)(2)
* Pin (8448655)

Group IV

Key & Bolt Carrier Assy (8448505).
Takedown Detent Spring (8448586) (2).
Handguard Slip Ring (8448712).
Ejector and Safety Detent Spring (8448516)(2).
Retainer Buffer (8448582).
Trigger and Hammer Pin (8448609) (2).
Front Sight Detent Spring (8448574).
Buttplate Assembly (9349130).

Group V

* Buffer Retainer Spring (8448583)
* Buttstock (9349121).
Ejection Port Cover Spring (8448532).
* **Ejector Pin (MS16562-98).
Magazine Catch (8448638).

Group VI

Rear Sight (9349075).
Bolt Cam Pin (8448502).
Bolt Catch (8448628).
Pistol Grip (9349127).
Buffer Assy (8448615).
Pawl Spring Pin (8448521-2).
Index Spring (9349069) (3).

Group V

Semi Disconnect (9349114)
Plunger Assy (9349085).
* Rear Sight Base (9349074).
Pistol Grip Screw (AN501D-416-18).
* Burst Cam (9349108).
* Handguard Spring Assembly (8448555)

Group VI

Handguard Retaining Ring (8448665).
Elevation Spring (9349070)
Swivel (8448652)

Group VII

* Ejector (8448515)
* Rear Sight Spring (8448536).
Gas Tube Assy (8448567)
* Hammer & Hammer Pin Retainer Assy (9349110)
* Compensator (9349051)
Firing Pin Retaining Pin (8448504).
* Bolt Catch Plunger (8448634).
Pawl (8448543).
* Hinge (8448653)
* **Index Screw (9349065).

Group VIII

Pivot Pin (8448621).
Firing Pin (8448503).
Rear Sight Windage Screw (9349076)
**Gas Tube Pin (MS16562-106).
Handguard Assy (9349059) (Top Section).
Bolt Catch Spring (8448633).
Automatic Sear Pin (8448599).
**Compensator Spacer (9349052). or Compensator Spacer (9387099) & Compensator shim (9387098).
Pawl Detent (8448544).
Elevation Index (9349066).
Burst Disconnect (9349113).

Group IX

Rear Sight Windage Knob (9349077).
* Charging Handle Assy (8448517).
* **Bolt Catch Pin (MS16562-119)
Hammer Spring (9349107).
* Fire Control Selector (9381367).
Bolt Spring (8448542).
Elevation Knob (9349067)
* Front Sight Detent (8448573).
* Door Assembly (9381380).
*

Group X

Extractor (8448512) w/Spring Assy (8448755).
Trigger Guard Assy (8448587).
Handguard Assy (9349059). (Bottom Section).
Automatic Sear Assy (8448595).
Action Spring (8448629).
Fire Control Selector Detent (8448631).
Plunger Spring (8448540).
Rear Sight Ball (MS19060-4808) (3).
Clutch Spring (9349109).
**Swivel Screw (9349120).

Note: All items preceded by a double asterisk (**) shall be replaced during interchangeability test. Parts inadvertently damaged during interchange may be replaced without penalty when authorized and verified by the government representative witnessing the test.

4.7.7.1.2 Concurrent repair parts. The interchangeability test for concurrent repair parts shall be conducted during inspection lot test in accordance with TABLE IV. The five rifles used for the repair parts interchangeability test shall have met the test requirements of TABLE III, firing pin indent test (see 4.7.2) and the classification of defects (see 4.5.2.2.3) shall be disassembled as required and reassembled using the concurrent repair parts. No hand refinement of parts shall be permitted during interchange of parts. A function firing test (including cyclic rate of fire) specified in test method 4.7.5 shall be performed on the reassembled rifles when the following repair parts are interchanged.

Receiver - Upper (9349063).
Magazine Catch Spring (8448637).
Trigger (9390736).
Bolt (8448510). & remaining parts.
Trigger Spring (8448593).
Magazine Catch (8448638).
Ejector (8448515).
Gas Tube Assy (8448567).
Bolt Catch Plunger (8448634).
Barrel & Front Sight Assy (9349124) & remaining parts.
Extractor Pin (8448513).
Semi Disconnect (9349114).
Burst Disconnect (9349113).
Compensator (9349051).
Clutch Spring (9349109).
Burst Cam (9349108).
Hammer & Hammer Pin Retainer Assy (9349110).
Ejector & Safety Detent Spring (8448516).
Trigger & Hammer Pin (8448609) (2).
Spring Disconnect (9349116) (2).
Bolt Cam Pin (8448502).
Bolt Catch (8448628).
Buffer Assembly (8448615).
Firing Pin (8448503).
Bolt Catch Spring (8448633).
Hammer Spring (9349107).
Fire Control Selector (848630).
Key (8448506).
Extractor (8448512) w/Spring Assy (8448755).
Automatic Sear Assy (8448595).
Action Spring (8448629).
Bolt Carrier (8448507).

4.7.7.2 Interplant. The rifles subjected to interplant interchangeability test (see TABLE IV) shall be given a preliminary hand functioning to assure proper operation before parts are disassembled from the rifle. The rifles shall be tested for headspace, firing pin indent, trigger pull, functioning and accuracy requirements before and after interchange of parts, using the test methods specified in 4.7.1, 4.7.2, 4.7.3, 4.7.5 and 4.7.6

respectively. Interchange of parts shall be accomplished in a manner similar to that specified in 4.7.7.1.1. Detailed procedures for this test shall be as specified in the contract (see 6.1), depending on the number of different manufacturers involved.

4.7.7.3 Failure of interchangeability test.

4.7.7.3.1 Rifles.

4.7.7.3.1.1 Second sample. Failure of parts to reassemble during parts interchange or subsequent failure of any rifle to meet the headspace, firing pin indent, trigger pull, functioning and accuracy requirements shall be cause for selection of an additional sample of rifles for the represented inspection lot to determine the prevalence of a similar defect. The sample shall consist of 20 rifles when the lot size is 1,000 and 50 rifles when the five lot (or larger) group is represented.

4.7.7.3.1.1.1 Acceptance. If a similar defect is not found, the nonconforming rifles shall be corrected and the lot shall be accepted.

4.7.7.3.1.1.2 Rejection. If a similar defect is found, the inspection lot shall be rejected and the contractor shall examine and correct all rifles in the represented lot to insure the material containing the defects or similar defects revealed during testing are purged from the represented lot and are not presented to the Government for acceptance. The contractor shall also correct the applicable production and inspection processes and procedures to prevent the recurrence of defects revealed during the test.

4.7.7.3.1.2 Accuracy failure. Rifles failing to meet the accuracy requirements shall be corrected by the contractor to meet the requirements before they are returned to the represented lot for final acceptance.

4.7.7.3.2 Repair parts. Failure of any repair part to meet the interchangeability requirements shall cause the contractor to determine the cause of failure and inspect a sample representing the lot of parts to determine the prevalence of a similar defect. Sampling shall be in accordance with MIL-STD-105, using inspection Level II with an AQL of 0.65. Upon completion of inspection, the lot shall be reconditioned as necessary prior to submitting the lot for retesting. The contractor shall evaluate and correct the applicable production and inspection process and procedures to prevent recurrence of the defects revealed during the testing.

4.7.7.3.3 <u>Recording of data</u>. The following data shall be recorded:

a. Inspection lot number.
b. Rifle serial numbers.
c. All measurements required for headspace, firing pin indent, trigger pull, functioning and accuracy requirements before and after interchange of parts.
d. Cyclic rate of fire before and after interchange of parts.
e. Failure of any part to interchange.
f. Any damaged part that was replaced.

4.7.8 <u>Endurance test</u>. The endurance test shall be performed during inspection lot testing in accordance with TABLE IV. Rifles shall be held in a Government approved firing stand using a Government approved timing gage for measurement of cyclic rate of fire. The ammunition used for this test shall be as specified in 3.4.7.

4.7.8.1 <u>Cleaning and lubrication</u>. Rifles shall be lubricated as specified below at the beginning of the test and after the fifth cycle in every 10 cycle increment. Rifles shall be cleaned and lubricated at the end of every 10 cycles. No other cleaning and lubrication shall be performed during this test. At the close of each day's firing, the rifle shall be protected against corrosion.

4.7.8.1.1 <u>Lubrication</u>. Rifles shall have been lubricated using lubricant in accordance with MIL-L-63460 (CLP). Apply a light coat of oil to all surfaces of the bolt carrier group. (Do not apply excessive oil in the bolt firing pin recess.) Apply a moderate coat of oil on all firing mechanism components in lower receiver.

4.7.8.1.2 <u>Cleaning</u>. Rifles shall be cleaned with a cleaning solvent in accordance with MIL-C-372 and the following procedures:

a. <u>Barrel</u>. Brush bore thoroughly with a brush soaked in cleaning solvent. Brush the bore from the chamber to the muzzle using straight through strokes. Do not reverse direction of brush until it extends beyond the muzzle. Continue brushing until the bore is covered with solvent. Dry the bore by pushing clean dry swabs through the bore. Continue until the swab comes out clean and dry. Clean dry compressed air may be used for preliminary drying.

b. Barrel chamber. Insert the cleaning rod section and chamber brush that has been dipped in cleaning solvent into the chamber and use reciprocating plunge strokes and rotational 360° motions. Dry chamber with cleaning swabs.

c. Barrel extension. Using a small bristle brush that has been dipped in cleaning solvent, clean the locking lugs in the barrel extension. Remove excess cleaning solvent.

d. Bolt carrier group. With the exception of the bolt carrier key, bolt rings, extractor spring and the ejector, disassemble all parts, wash these parts in cleaning solvent and remove all carbon deposits. Particular attention should be given to the areas under the face of the extractor and behind the three rings on the bolt. Clean the bolt carrier key hole with a worn bore brush that has been dipped in cleaning solvent by rotating the brush clockwise (repeat several times until clean). Remove excess solvent and dry.

e. Upper receiver. Clean with cleaning solvent and remove all powder fouling. Clean the protruding gas tube using a bore brush attached to a section of the cleaning rod. Saturate the brush with cleaning solvent. (Do not use any type of abrasive material to clean the gas tube. Remove excess cleaning solvent.)

f. Lower receiver. Remove all carbon residue from lower receiver group assembly using cleaning solvent. Drain excess solvent from lower receiver cavity and dry.

4.7.8.2 Magazine. The twenty (20) 30 round magazines used in each rifle shall be numbered and used in rotation during this test. Magazines shall be fully loaded for each use. Each magazine used during this test shall be cleaned at the specified cleaning interval for the rifle with a cleaning solvent in accordance with MIL-C-372 and blown dry with prepared compressed air.

4.7.8.3 Measurements. The following measurements shall be made during this test:

a. Headspace. Headspace for rifles being fired with 30 round magazines shall be measured and recorded at the beginning of the test and at the completion of the 50th cycle. After the 50th cycle, the headspace shall not be more than .0028 inch greater than the initial measurement and shall not exceed .0024 inch over maximum.

b. Cyclic rate of fire. The cyclic rate of fire for rifles being fired with 30 round magazines shall be measured and recorded during the second magazine of the first cycle and the first magazine of every ninth cycle thereafter. Cycle rate of fire shall be measured during the fourth or fifth burst from the magazine.

4.7.8.4 Firing procedure. Firing shall be accomplished in 50 cycles using 30 round magazines. One (1) firing cycle shall be as specified in TABLE V. Cooling of the barrel shall be to the point that it is capable of being held by the bare hand. Supplemental cooling is permissable in the hand guard area.

TABLE V. Firing cyclic.

30 ROUND MAGAZINE	REMARKS
30 rounds	Burst - one complete trigger pull (3 round burst) every 5 to 8 seconds.
30 rounds	Burst - one complete trigger pull (3 round burst) every 2 to 5 seconds.
30 rounds	Semi-Automatic - rate of 10 to 30 rounds per minute.
30 rounds	Semi-Automatic - rate of 10 to 30 rounds per minute.
120 rounds	Total

4.7.8.4.1 Unrestrained firing. During the 18th and 36th cycles for 30 round magazines, the semi-automatic firing shall be conducted outside the firing stand by firing the rifle held in the hands not touching the shoulder and without restraining the normal recoil of the rifle.

4.7.8.4.2 Failure to lock. In the event of a failure of the bolt to lock, the forward assist assembly shall be operated (see 3.3.3.7).

4.7.8.4.3 Doubling. During semi-automatic firing, rifles shall be checked to assure that no doubling occurs (i.e., two shots fired with a single trigger pull). Doubling shall be recorded as a malfunction.

4.7.8.4.5 Replacement of parts. No parts shall be altered during the test. Broken parts that affect function and those parts that are worn to the extent they are unserviceable (see 6.5) shall be replaced. The contractor shall provide replacement parts as required to complete the test at no additional cost to the Government.

4.7.8.4.6 Magnetic particle inspection. Upon completion of the 6,000 round endurance test, the bolt from each rifle shall be magnetic particle inspected in accordance with 4.7.4.3.

4.7.8.4.7 Analysis. When either a malfunction occurs or a rifle fails to meet a test requirement, a failure analysis shall be performed to determine the causes. The failure analysis shall include dimensional and physical tests. Components shall not be disassembled from the rifle for inspection and test unless determined necessary.

4.7.8.4.8 Recording of data. The following data shall be recorded:

a. Inspection lot number.
b. Rifle serial numbers.
c. Each malfunction and unserviceable part (see 6.5).

    1. Rifle round at which it occurred.
    2. Rifle serial numbers.
    3. Type of firing (burst or semi-automatic).
    4. Class of malfunction.

d. Ammunition lot number.
e. Headspace measurement.
f. Each rate of fire measurement with identification of which cycle.
g. Each ammunition defect.
h. The cause of each rifle failure.
i. If applicable, cause of test failure.
j. Type of magazine (30 round magazine).

4.7.8.5 Failure of endurance test. Failure of rifles to meet the endurance test requirements shall be cause for deferring further submission of product until the following have been accomplished and the subsequent resubmittal for endurance testing, as specified in TABLE IV, has been successfully completed.

4.7.8.5.1 Examination. The contractor shall examine the non-conforming rifles by performing a dimensional, physical, and visual examination, as required, of the rifle and magazine component that are suspected to be the cause of the test failure.

4.7.8.5.2 Retest. When the cause of the malfunction cannot be determined, the contractor shall provide the Government representative with objective evidence of the results of this analysis. Upon concurrence of the Government representative, the contractor shall retest an additional sample of four rifles for the endurance test requirements. Failure of the additional four rifles to pass endurance test requirements shall be reason for the contractor to determine failure cause. If cause of retest failure cannot be determined, technical assistance shall be requested through normal contractual channels.

4.7.8.5.3 Malfunction classification. When the cause of the malfunction can be determined, the contractor shall make a determination as to the seriousness of the cause. The contractor, in addition, shall provide the Government representative with objective evidence of his determination.

4.7.8.5.3.1 Class I malfunction. When the malfunction cause is classified as Class I (see 6.5.5), as verified by the Government representative, the Government representative shall select, from the represented lot, an additional sample in accordance with MIL-STD-105, General Inspection Level II, TABLE II A, at an Acceptable Quality Level of 0.65. This sample shall then be inspected by the contractor for the rifle non-conformance determined to be the cause.

a. If the additional sample is rejected, the contractor shall examine and correct all rifles in the represented lot and institute corrective action in the manufacturing processes and associated quality control procedures to preclude recurrence of the cause and to assure that materiel containing similar defects is purged from the prime and vendor facilities. The contractor, upon completion of the preceding, shall resubmit the reconditioned lot for endurance test as specified in TABLE IV. Rifles reconditioned by parts replacement shall be retested in accordance with TABLE III prior to resubmittal for endurance testing.

b. If the additional sample is accepted, the Government representative shall select a second sample of four rifles for the endurance test as specified in TABLE IV.

4.7.8.5.3.2 Class II or III malfunction. When malfunction cause is classified as Class II or III (see 6.5.5), the contractor shall examine and correct all rifles in the lot and institute corrective action in the manufacturing processes and asssociated quality control procedures to preclude recurrence of the cause and to assure that materiel containing similar defects is purged from both the prime and vendor or vendor facilities. The contractor, upon completion of the preceding, shall resubmit the reconditioned lot for the endurance test specified in TABLE IV. Rifles reconditioned by parts replacement shall be retested in accordance with 4.5.2.1.1.1 prior to resubmittal for endurance testing.

4.7.8.5.3.3 Repair parts. Upon identification of the cause of failure, acceptance of product may be resumed on those components (repair parts) which have been determined to meet contract requirements and did not contribute to the failure.

4.7.8.6 Test sample disposition. Disposition of endurance tested rifles shall be as specified in the contract (see 6.1).

4.7.9 Packaging test.

4.7.9.1 Determination of cleanliness. The applicable surfaces of each sample unit (except for barrel bores and chambers) shall be subjected to the determination of cleanliness test specified in MIL-P-116, except that the wipe test shall not be applicable to parts with black oxide or anodized protective coatings. Barrel bores and chambers shall be wipe tested for cleanliness using clean white bore cleaning swabs and the degree of cleanliness shall be verified by comparison of test swabs with standard swab samples provided by the contracting officer.

5. PACKAGING

5.1 Pilot pack. A pilot pack shall consist of complete and packed intermediate package in accordance with Packaging Data Sheet 9349000 for the level of protection specified in the contract (see 6.1) and forwarded in accordance with 3.1.

5.2 Preservation, packaging, packing and marking. Rifles with equipment shall be unit packaged, packed and marked in accordance with the requirements of Packaging Data Sheet as applicable, for the level of protection specified (see 6.1).

5.3 Repair parts. Repair parts shall be unit packaged, packed and marked in accordance with the requirements of the applicable Packaging Data Sheets specified in the contract (see 6.1).

6. NOTES

6.1 Ordering data. Procurement documents should specify the following:

a. Title, number and date of this specification
b. Lists of drawings and specifications pertinent to the rifle, showing applicable revision dates.
c. Examination and testing criteria for components (see 4.5.2.1, 4.5.2.3, 4.5.2.4, 4.5.3.2, 4.5.3.3.2).
d. The packages opened for examination shall be repackaged by the contractor at the contractor's expense (see 4.5.2.4).
e. Disposition of interchangeability and endurance tested rifles (see 4.7.7 and 4.7.8).
f. Selection of applicable levels of preservation, packaging and packing (see 5.1 and 5.2).

g. Shipping instructions for first article sample (see 3.1 and 4.4) and pilot pack, if different (see 3.1 and 5.1).
h. Packaging instructions for repair parts (see 5.3).
i. Place of final inspection and acceptance (see 4.5.2.1).
j. Lists of acceptance inspection equipment to be furnished the contractor (see 4.6) and responsibilities for other Government property to be furnished the contractor.
k. Responsibility for furnishing ammunition (see 4.7.4, 4.7.5, 4.7.6, 4.7.8 and 6.4).
l. Shipping instructions when an interplant interchangeability test is required (see 4.7.7.2 and TABLE IV note 6).
m. Procedures and methods for demilitarizing and disposing of rejected material.
n. Disposition of Government furnished property.
o Responsibility for test firing facilities and operating procedures.

6.2 Test firing facilities. Test firing facilities and operating procedures shall be designed by the contractor in conformance with local, state, and Federal regulations and suitable for carrying out prescribed firing tests with safety of operating and visiting personnel. Copies of these contractor designs shall be forwarded to the contracting officer. Government facilities may be viewed upon application to the contracting officer.

6.3 Testing agency. When action by a testing agency is required, work programming will be affected with the testing agency at the earliest practical date.

6.4 Ammunition for test firing. To avoid delay in test firing, the contractor should maintain a minimum of two month's supply of ammunition as determined by anticipated firing requirements.

6.5 Definitions.

6.5.1 Malfunctions.

a. Failure of bolt to lock. Failure of bolt to fully close and rotate to the locked position in the barrel extension.

b. Failure of the forward assist assembly to assist bolt closure. Failure of the pawl of the forward assist assembly to engage or remain engage with the bolt carrier serrations during manual attempt to lock the bolt, when the bolt fails to lock on return to the battery position.

c. Failure to fire. Failure of the rifle to fire the cartridge, when the cartridge has been fully chambered; bolt has been locked in the battery position, and the trigger has been pulled.

d. Failure to feed from magazine. Failure of the bolt to completely strip the next round from the magazine.

e. Failure to eject. Failure of the rifle to eject a round from the rifle, when the cartridge has been fired and the cartridge case has been completely extracted from the magazine.

f. Failure to chamber. Failure of the rifle to chamber a cartridge that has been completely stripped from the magazine.

g. Failure to extract. Failure of the rifle to remove a cartridge case or unfired cartridge from the chamber.

h. Bolt fails to hold to the rear. Failure of the bolt to remain in the rearward position after the last round in the magazine has been fired.

6.5.2 Flyer. A flyer is defined as a shot hole which is a greater distance from the nearest shot hole than the extreme spread of the other nine holes (including the shot hole nearest the flyer).

6.5.3 Keyholing. Keyholing is defined as any shot hole on the target that is not circular.

6.5.4 Unserviceable part. An unserviceable part is one that causes malfunction of the rifle or impairs the safety of the user. Parts which are worn, broken, deformed, cracked or contain defects to the extent that they may affect function or safety in operation of the rifle shall also be considered unserviceable.

6.5.5 Class of malfunction.

Class I. Immediately clearable (clearable by gunner through operation of charging handle, removal of magazine or manually removing round without aid of tools or equipment).

Class II. Clearable by gunner with available equipment. (Basic Issue Items).

Class III. Not clearable by gunner.

6.5.6 Defective rifle. A defective rifle is a unit of product which contains one or more defects (end item assembly or component).

6.6 Quality program. When warranted, the contract should specify the application of MIL-Q-9858 or MIL-I-45208, as appropriate, in the Management Control Systems Summary List, DD Form 1660.

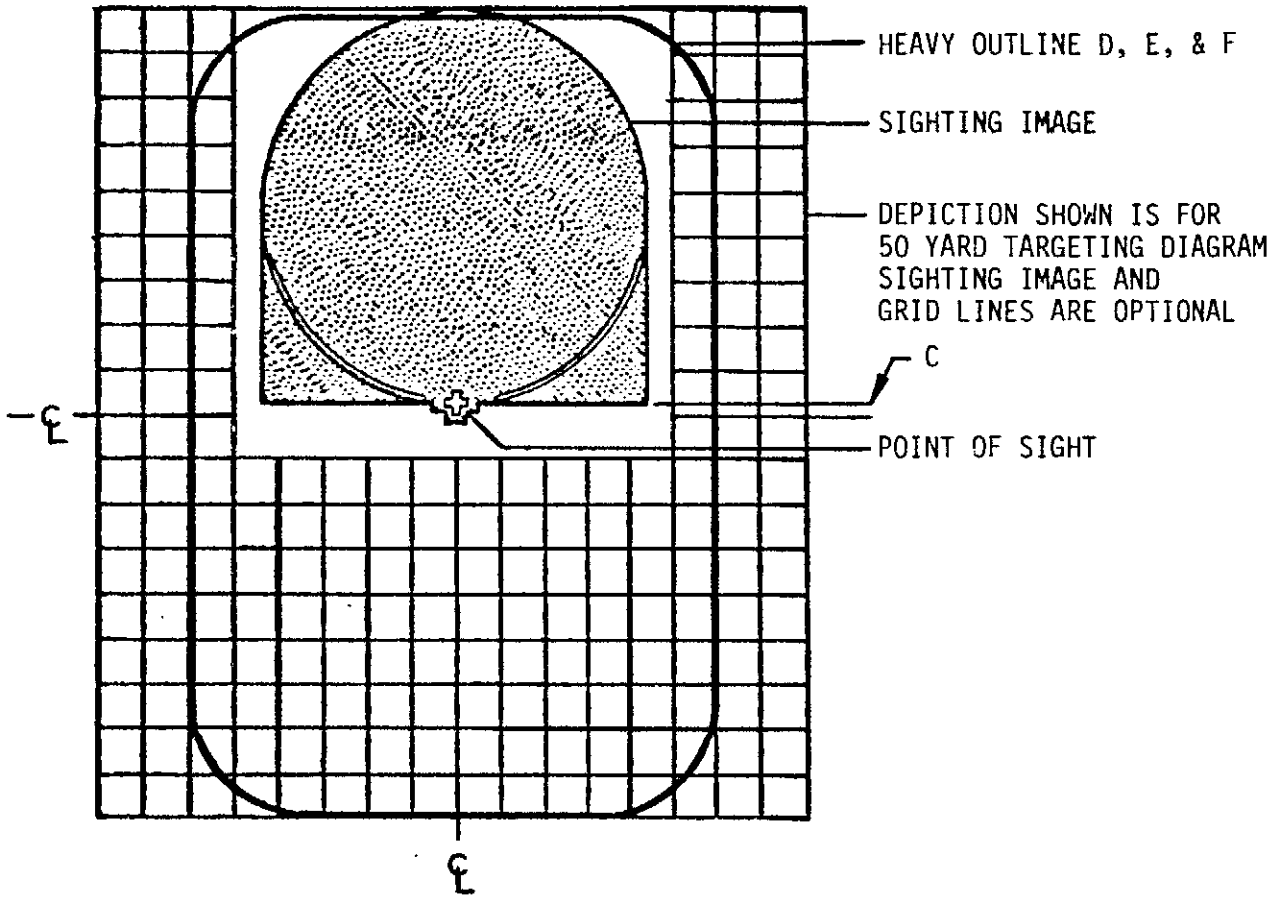
6.7 Inspection equipment. Unless otherwise specified , the contract should specify the application of MIL-I-45607 and MIL-STD-45662 on the Management Control Summary List, DD Form 1660.

6.8 Drawings. Drawings listed in Section 2 of this specification under the heading U.S. Army Armament Research, Development and Engineering Center may also include drawings prepared by, and identified as Rock Island Arsenal, Frankford Arsenal, Picatinny Arsenal or ARRADCOM drawings. Technical data originally prepared by these activities is now under the cognizance of ARDEC.

6.9 Changes from previous issue. The margins of this specification are marked with asterisks to indicate where changes (additions, modifications, corrections, deletions) from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous issue.

6.10 Subject term (key-word) listing.

Military specification
M16A2
Rifle, 5.56mm
Small arms



A - 10 SHOT GROUP EXTREME SPREAD
B - SIGHTING IMAGE DIAMETER
C - DISTANCE POINT OF AIM ABOVE HORIZONTAL ℄ OF HEAVY OUTLINE
D - HEIGHT OF HEAVY OUTLINE
E - WIDTH OF HEAVY OUTLINE
F - RADIUS OF CORNERS OF HEAVY OUTLINE
G - GRID DIMENSIONS

TARGET DIAGRAM FOR		DIMENSIONS IN INCHES						
		GROUP	IMAGE		HEAVY OUTLINE			GRID
METERS	YARDS	A	B	C	D	E	F	G
91.4	100	4.8	8.0	0.5	17.6	11.6	2.8	1.00
45.7	50	2.4	4.4	0.14	8.95	5.95	1.5	0.50

FIGURE I. Targeting and accuracy diagram.

Custodian:
Army-AR

Preparing activity:
Army-AR

(Project 1005-A661)

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NOTE: This form may not be used to request copies of documents, nor to request waivers, deviations, or clarification of specification requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document*(s)* or to amend contractual requirements.

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STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL
(See Instructions – Reverse Side)

1. DOCUMENT NUMBER	2. DOCUMENT TITLE
MIL-R-63997B (AR)	Rifle, 5.56MM: M162A2

3a. NAME OF SUBMITTING ORGANIZATION	4. TYPE OF ORGANIZATION *(Mark one)*
	☐ VENDOR ☐ USER ☐ MANUFACTURER ☐ OTHER *(Specify)*: ______
b. ADDRESS *(Street, City, State, ZIP Code)*	

5. PROBLEM AREAS

a. Paragraph Number and Wording:

b. Recommended Wording:

c. Reason/Rationale for Recommendation:

6. REMARKS

7a. NAME OF SUBMITTER *(Last, First, MI)* – Optional	b. WORK TELEPHONE NUMBER *(Include Area Code)* – Optional
c. MAILING ADDRESS *(Street, City, State, ZIP Code)* – Optional	8. DATE OF SUBMISSION *(YYMMDD)*

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